# PHILIPS

# 25ML8966

MODEL

SERVICE MANUAL

Colour television Chassis

Service
Service
Service

# FL 1.1 AC
# FL 1.7 AA

# Service Manual

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PCS 42 397 GB

# 1.2 CHASSIS FL1.1 Block diagram

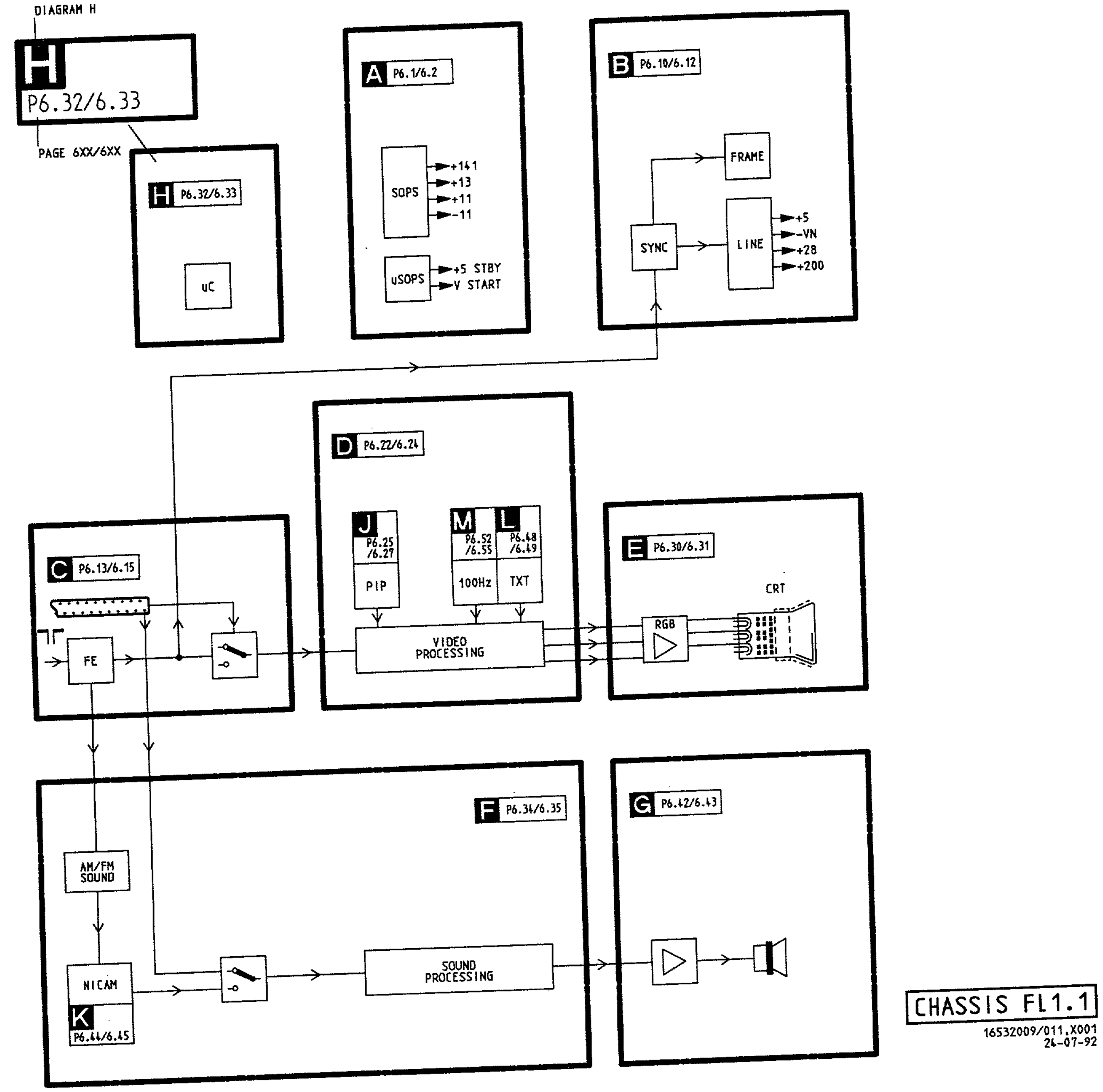


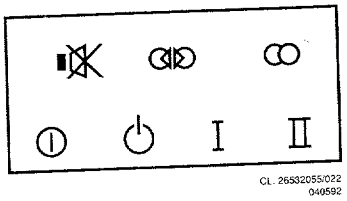
DIAGRAM H
H
P6.32/6.33
PAGE 6XX/6XX
H P6.32/6.33
uC
A P6.1/6.2
SOPS
+141
+13
+11
-11
uSOPS
+5 STBY
V START
B P6.10/6.12
FRAME
SYNC
LINE
+5
-VN
+28
+200
D P6.22/6.24
J P6.25 /6.27
PIP
M P6.52 /6.55
100Hz
L P6.48 /6.49
TXT
VIDEO PROCESSING
C P6.13/6.15
FE
E P6.30/6.31
CRT
RGB
F P6.34/6.35
AM/FM SOUND
NICAM
K P6.44/6.45
SOUND PROCESSING
G P6.42/6.43
CHASSIS FL1.1
16532009/011.X001
24-07-92

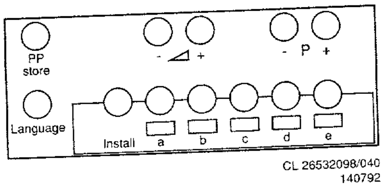
## Technical data

| | |
|---|---|
| Mains voltage | : 220 - 240 V (± 10%)<br>: 50 Hz - 60 Hz (± 5%) |
| Aerial input impedance | : 75 Ω - koaxial |
| Minimum aerial voltage | : 30 µV (VHF), 40 µV (UHF) |
| Maximum aerial voltage VHF/S/UHF | : 180 µV |
| Pull-in range colour synchronization | : ± 300 Hz |
| Pull-in range horizontal synchronization | : +200 Hz/-300Hz |
| Programmes | : 0 - 59 |
| VCR programmes | : 0, 00, 50 - 59 |

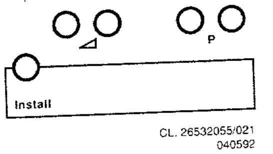
**Local operation functions:**

**Indications:**
- On Screen Display (OSD)
- LED:


CL 26532055/022
040592


PP
store
Language
Install
a
b
c
d
e
- ⊿ +
- P +
CL 26532098/040
140792

FL1.1

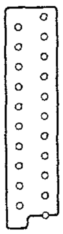

⊿
P
Install
CL 26532055/021
040592

FL1.7

# Connection facilities

## 1. Specification of the connectors

### EXT1 (AUX)



1 -Audio ○→ R (0,5$V_{RMS}$ ≤ 1kΩ)
2 -Audio →○ R (0,2 - 2$V_{RMS}$ ≥ 10kΩ)
3 -Audio ○→ L (0,5$V_{RMS}$ ≤ 1kΩ)
4 -Audio ⊥
5 -Blue ⊥
6 -Audio →○ L (0,2 - 2$V_{RMS}$ ≥ 10kΩ)
7 -Blue (0,7$V_{pp}$/75Ω)
8 -CVBS-status 1 →○ 0-2V: int
4,5-7V: ext 16:9
9,5-12V: ext 4:3
9 -Green ⊥
10 --
11 -Green (0,7$V_{pp}$/75Ω)
12 --
13 -Red ⊥
14 --
15 -Red (0,7$V_{pp}$/75Ω)
16 -RGB-status (0-0,4V: int. 1-3V ext. 75Ω
17 -CVBS ⊥
18 -CVBS ⊥
19 -CVBS ○→ (1$V_{pp}$/75Ω)
20 -CVBS →○ (1$V_{pp}$/75Ω)
21 -Earthscreen

### EXT3 (front)

SVHS[1] 1 - ⊥
2 - ⊥
3 - Y →○ ( 1$V_{pp}$; 75Ω)
4 - C →○ (0,3$V_{pp}$; 75Ω)

◎ CINCH Video →○ 300m$V_{pp}$/75Ω[1]
◎ CINCH Audio →○ L (0,5$V_{RMS}$; ≥ 10kΩ)[1]
◎ CINCH Audio →○ R (0,5$V_{RMS}$; ≥ 10kΩ)[1]

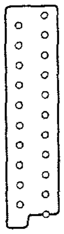
◎ 3.5mm 32-2000Ω ≥ 10mW

### Audio out (rear)

◎ CINCH Audio ○→ L (0,5$V_{RMS}$; ≤ 1kΩ)
◎ CINCH Audio ○→ R (0,5$V_{RMS}$; ≤ 1kΩ)

front : 2 x 16W / 8Ω[1]
rear : 2 x 6W / 8Ω[1]

### EXT2 (VCR)



1 -Audio ○→ R (0,5$V_{RMS}$ ≤ 1kΩ)
2 -Audio →○ R (0,2 - 2$V_{RMS}$ ≥ 10kΩ)
3 -Audio ○→ L (0,5$V_{RMS}$ ≤ 1kΩ)
4 -Audio ⊥
5 -
6 -Audio →○ L (0,2 - 2$V_{RMS}$ ≥ 10kΩ)
7 --
8 -CVBS-status 2 →○ 0-2V: int
4,5-7V: ext 16:9
9,5-12V: ext 4:3
9 --
10 --
11 --
12 --
13 --
14 --
15 --
16 --
17 -CVBS ⊥
18 -CVBS ⊥
19 -CVBS →○ (1$V_{pp}$/75Ω)
20 -CVBS →○ (1$V_{pp}$/75Ω)
21 -Earthscreen

### EXT2 (SVHS) (rear)

SVHS 1 - ⊥
2 - ⊥
3 - Y →○ ( 1$V_{pp}$; 75Ω)
4 - C →○ (0,3$V_{pp}$; 75Ω)

◎ CINCH Audio →○ L (0,5$V_{RMS}$; ≥ 10kΩ)
◎ CINCH Audio →○ R (0,5$V_{RMS}$; ≥ 10kΩ)

SVHS[1] 1 - ⊥
2 - ⊥
3 - Y ○→ ( 1$V_{pp}$; 75Ω)
4 - C ○→ (0,3$V_{pp}$; 75Ω)

◎ CINCH Audio ○→ L (0,5$V_{RMS}$; ≤ 1kΩ)[1]
◎ CINCH Audio ○→ R (0,5$V_{RMS}$; ≤ 1kΩ)[1]

---

[1] Only for FL1.1.

# 2.2 CHASSIS FL1.1 Connection facilities

## 2. Connection of equipment

When an SVHS source is connected to EXT2' (SVHS) or EXT3 (SVHS) the CVBS at these inputs is switched off. To reproduce the CVBS signal from these inputs, the particular SVHS plug must first be removed.

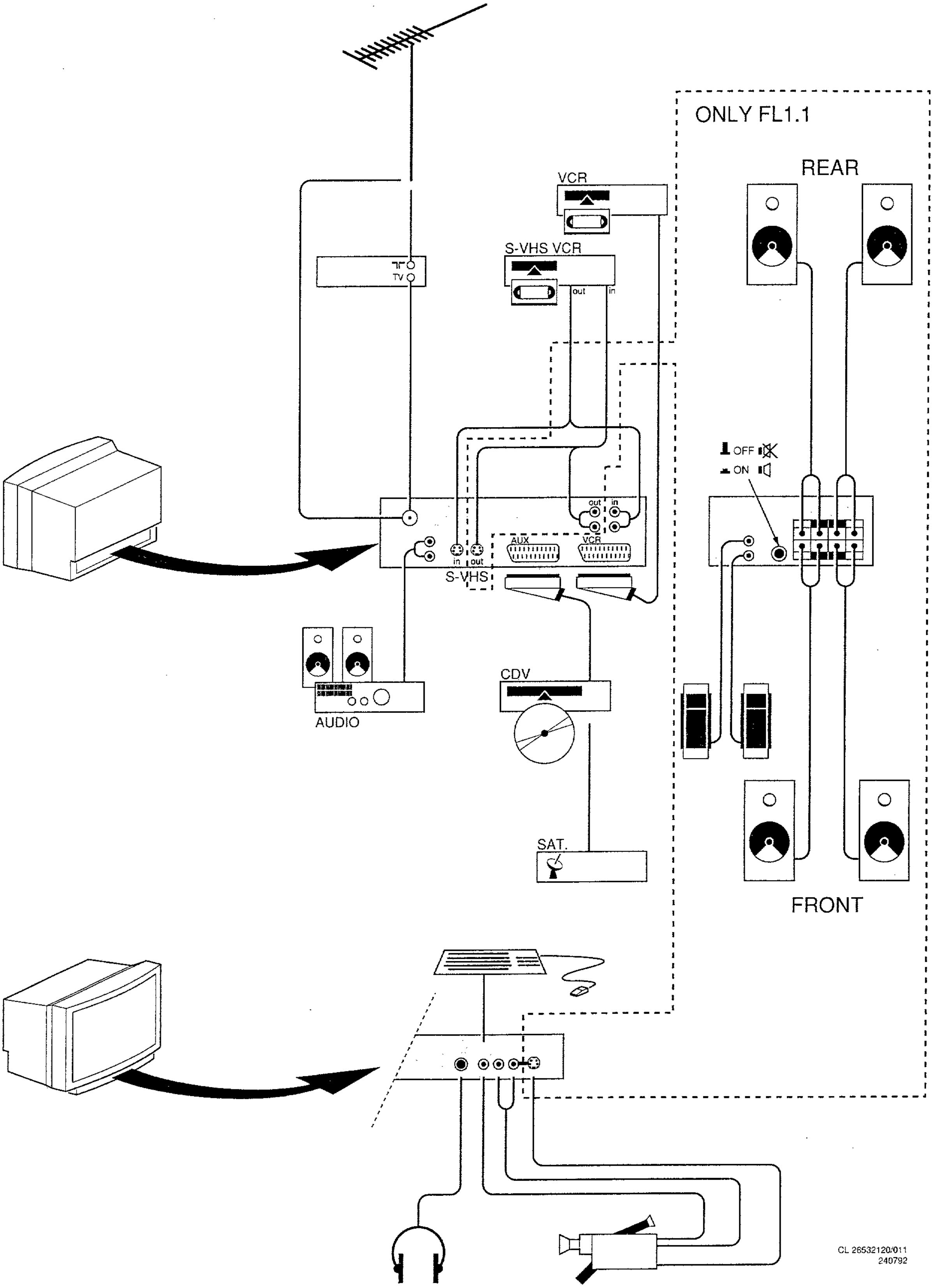

ONLY FL1.1
REAR
VCR
S-VHS VCR
out
in
TV
OFF
ON
out
in
AUX
VCR
in
out
S-VHS
AUDIO
CDV
SAT.
FRONT
CL 26532120/011
240792

Fig. 2.1

## Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol ⚠.

2. In order to prevent damage to ICs and transistors, all high-voltage flashovers must be avoided. In order to prevent damage to the picture tube, the method shown in Fig.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is OV (after approx. 30s).

3. **ESD** ⚠

   All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.

4. When repairing a unit, always connect it to the mains voltage via an isolating transformer.

5. Be careful when taking measurements in the high-voltage section and on the picture tube.

6. Never replace modules or other components while the unit is switched on.

7. It is recommended that safety goggles are worn when replacing the picture tube.

8. When making settings, use plastic rather than metal tools.
   This will prevent any short circuits and the danger of a circuit becoming unstable.

9. After repair the wiring should be fastened once more in the cable clamps for this purpose.

10. In order to prevent measuring errors, the heat sinks should not be used as reference points for measurements.
    **The heat sink for the sound output amplifier (next to the channel selector) is connected to the -16 or -12 volts.**

11. On this unit the 140 volt supply voltage is not supplied via an interconnection on the deflection yoke to the line output transformer. When the deflection cable is detached, the +140 volt supply remains loaded. In order to unload the +140 volts, coil 5511 should be removed.

12. Together with the deflection unit and any multipole unit, the flat square picture tubes used form an integrated unit. The deflection and the multipole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.

## Notes

1. The direct voltages and oscillograms should be measured with regard to the tuner earth (⊥), or hot earth (⊥ϟ) as this is called.

2. The direct voltages and oscillograms shown in the diagrams should be measured in the Service Default Mode (see chapter 8) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz.

3. Where necessary, the oscillograms and direct voltages are measured with (┐┌) and without aerial signal (╳). Voltages in the power supply section are measured both for normal operation (①) and in standby (⏻). These values are indicated by means of the appropriate symbols.

4. The picture tube PCB has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

5. The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

6. The connectors used for the modules (board to board) are gold-plated and should only be replaced by the same type.

7. In the case of error searching and/or repair to the PIP module, the accessibility of the circuit and the components can be increased by using extension cards.
   5 times: 4822 395 30261
   10 times: 4822 395 30257

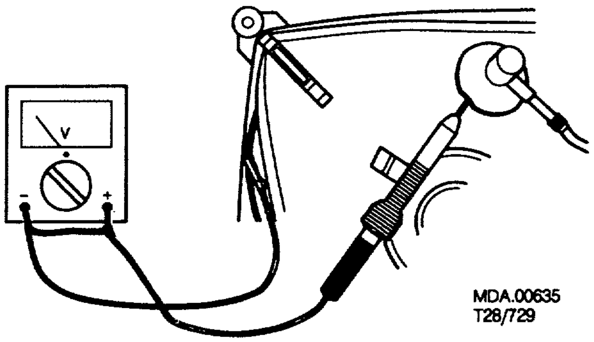


fig. 3.1

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!5 MHz.

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ıs. Each
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diagram

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# Mechanical instructions

## 1. Removing the back plate (Fig. 4.1)

Remove cover A from the back plate.
Remove connector B (L36) of the subwoofer.
Remove attachment screws C from the back plate.
Remove the back plate with the subwoofer fitted in it.
Attach the back plate by carrying out the above in the reverse order.

## 2. Service position to measure test points (Fig. 4.2)

Unlock the chassis panels by pressing locks D.
Pull both chassis panels backwards at the same time until all measuring points are accessible.

## 3. Service position for repair (Fig. 4.3)

Remove the LED display E (see Fig. 4.3) of the large signal panel.
Tilt the back of the two panels and attach both panels using brackets F situated on the underside of the small signal panel, at an angle of 90° to one another.

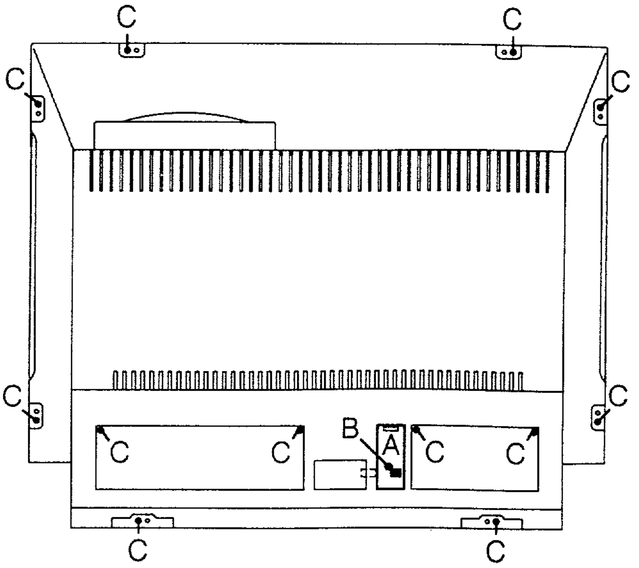
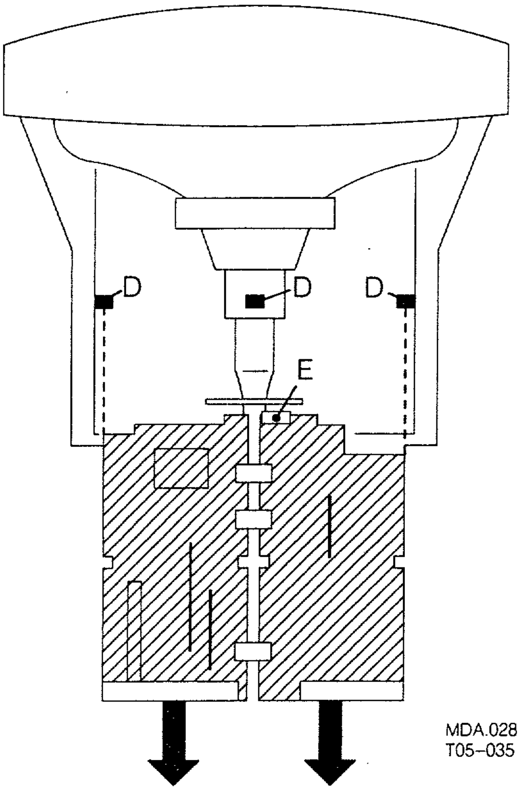


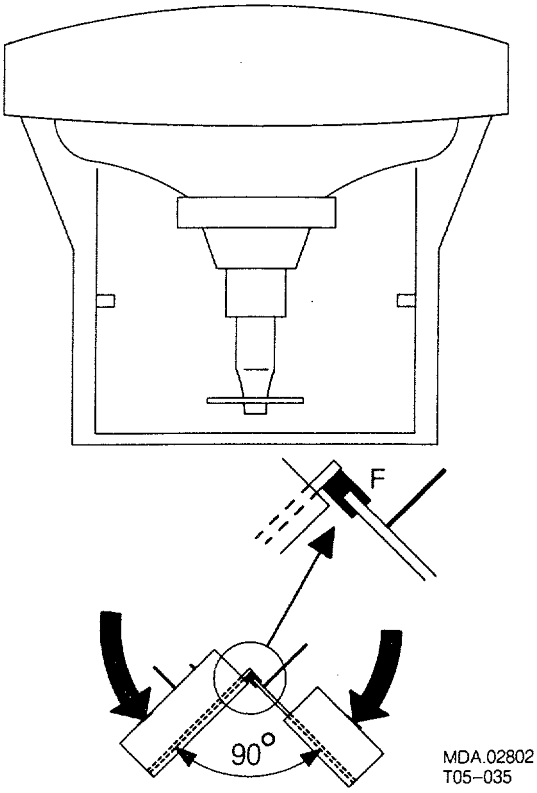
Fig. 4.1

MDA.02803
T05–035



MDA.02801
T05–035

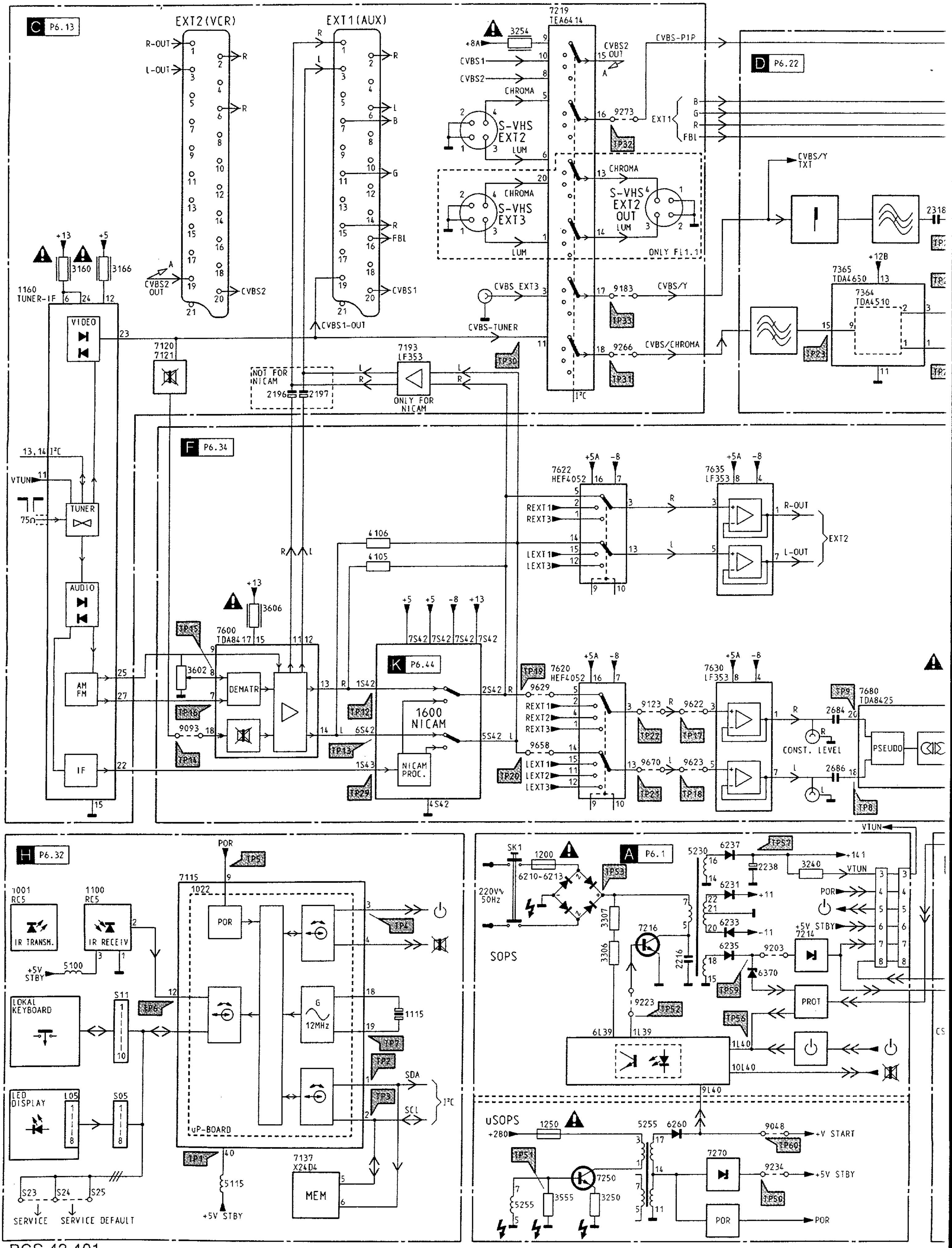
Fig. 4.2



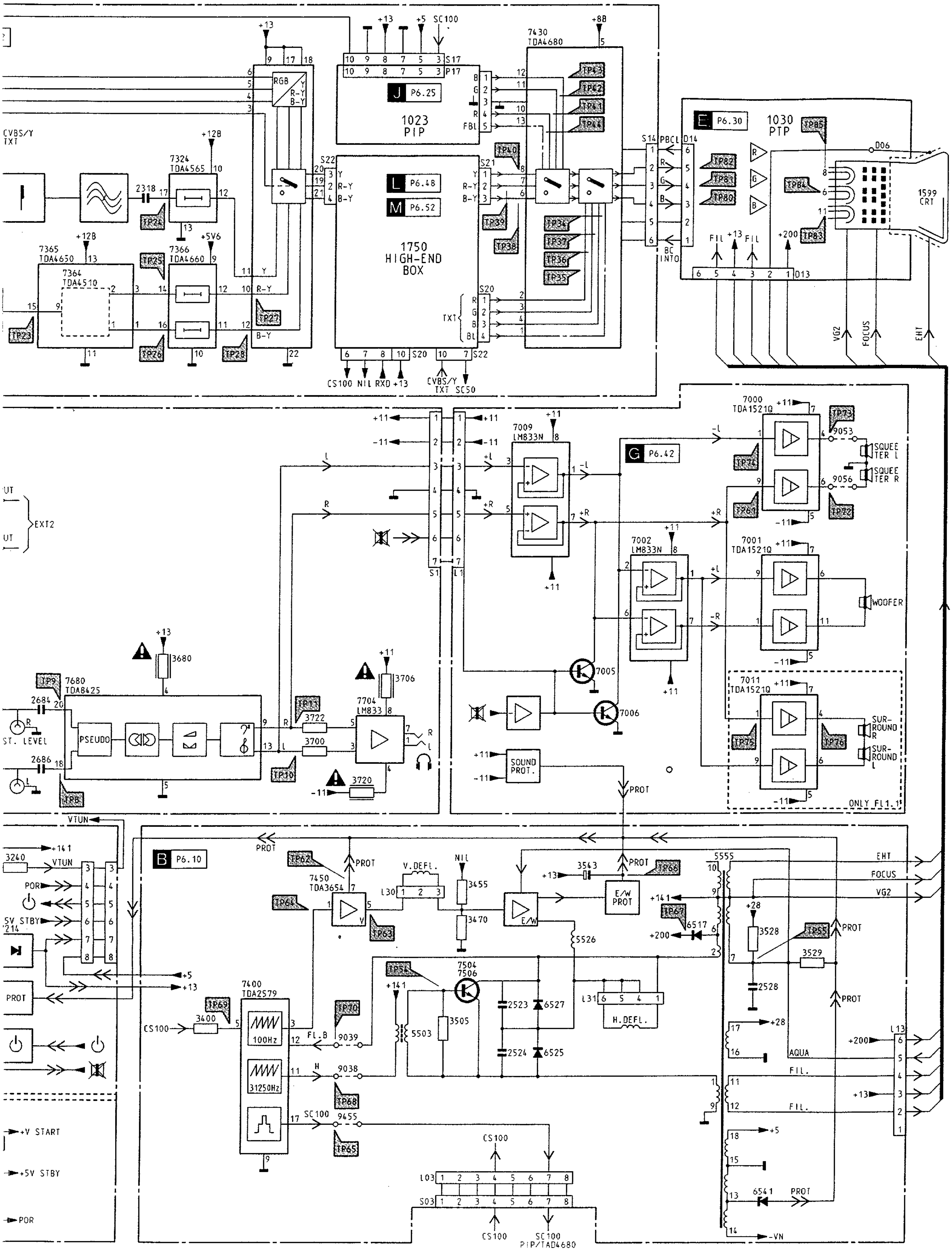
MDA.02802
T05–035

Fig. 4.3

# Blockdiagram / Blockschaltbild /

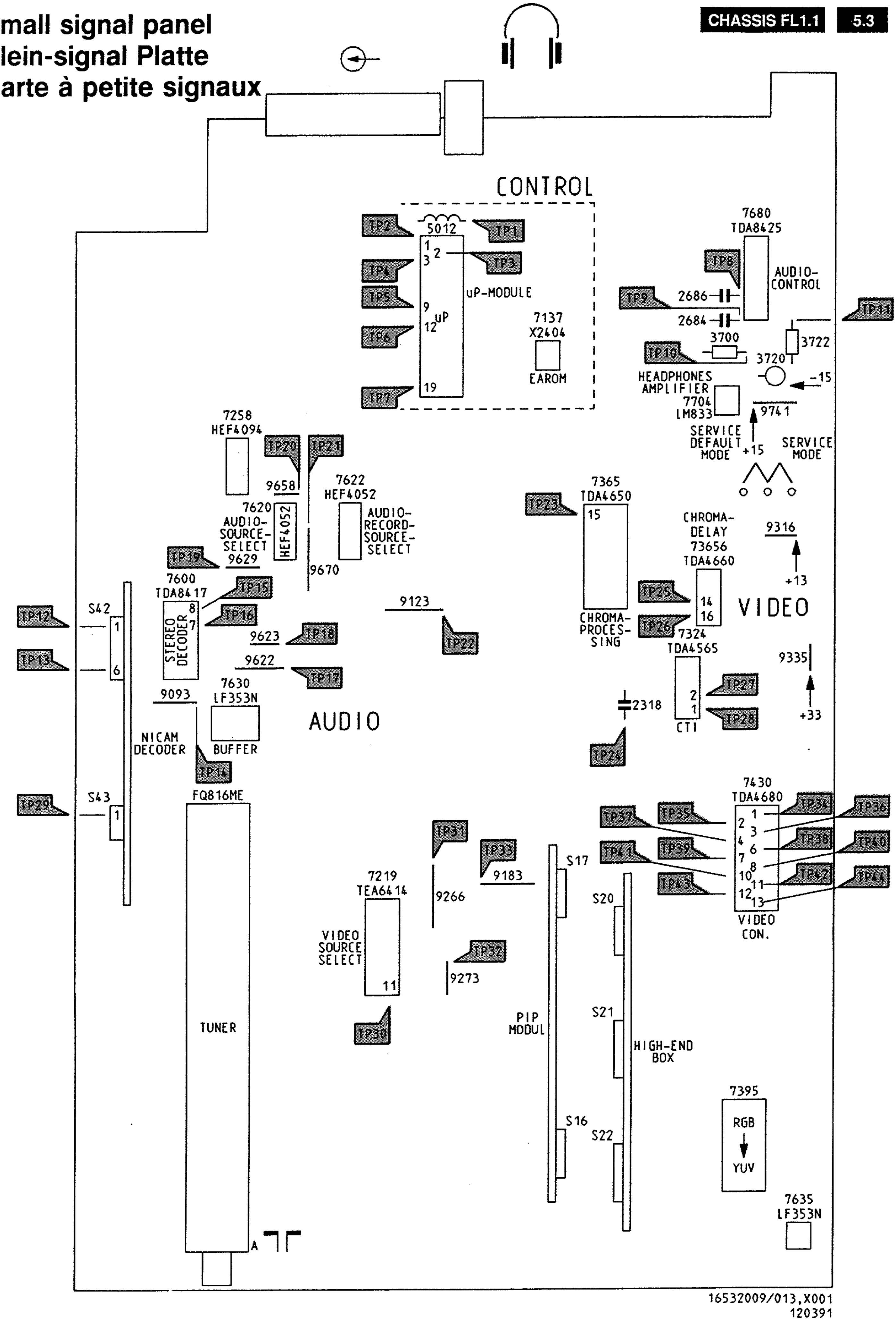

C P6.13
EXT2(VCR)
EXT1(AUX)
R-OUT
L-OUT
CVBS2 OUT
CVBS2
CVBS1
CVBS1-OUT
7219 TEA6414
3254
+8A
CHROMA
S-VHS EXT2
S-VHS EXT3
LUM
S-VHS EXT2 OUT
ONLY FL1.1
CVBS EXT3
CVBS-TUNER
CVBS2 15 OUT
CVBS-PIP
9273
9183
9266
CVBS/Y
CVBS/CHROMA
EXT1
B
G
R
FBL
I²C
TP30
TP31
TP32
TP33
D P6.22
CVBS/Y TXT
2318
+12B
7365 TDA4650
7364 TDA4510
TP23
1160 TUNER-IF
3160
3166
+13
+5
VIDEO
7120 7121
7193 LF353
NOT FOR NICAM
2196
2197
ONLY FOR NICAM
13,14 I²C
VTUN
TUNER
75Ω
AUDIO
AM FM
IF
F P6.34
3606
7600 TDA8417
DEMATR
3602
9093
TP14
TP15
TP16
4106
4105
K P6.44
1600 NICAM
NICAM PROC.
7S42
2S42
5S42
4S42
1S42
6S42
1S43
TP12
TP13
TP29
7622 HEF4052
7635 LF353
REXT1
REXT3
LEXT1
LEXT3
R-OUT
L-OUT
EXT2
+5A
-8
7620 HEF4052
7630 LF353
9629
9658
REXT2
LEXT2
9123
9622
9670
9623
TP17
TP18
TP19
TP20
TP21
TP22
TP9
7680 TDA8425
2684
2686
CONST. LEVEL
PSEUDO
TP8
H P6.32
1001 RC5
IR TRANSM.
1100 RC5
IR RECEIV
+5V STBY
5100
LOKAL KEYBOARD
S11
LED DISPLAY
L05
S05
S23
S24
S25
SERVICE
SERVICE DEFAULT
POR
TP5
7115
1022
uP-BOARD
TP1
TP2
TP3
TP4
TP6
TP7
12MHz
1115
SDA
SCL
I²C
5115
+5V STBY
7137 X24D4
MEM
A P6.1
SK1
1200
6210-6213
220V~ 50Hz
SOPS
TP53
3307
3306
7216
2216
9223
TP52
6L39
1L39
5230
6237
TP57
2238
3240
+141
VTUN
6231
+11
6233
-11
6235
9203
6370
TP59
7214
+5V STBY
PROT
TP56
1L40
10L40
9L40
uSOPS
+280
1250
5255
6260
9048
+V START
TP60
TP51
7250
3555
3250
7270
9234
+5V STBY
TP50
POR
CS

# 5.1 5.2 CHASSIS FL 1.1 Diagramme schématique

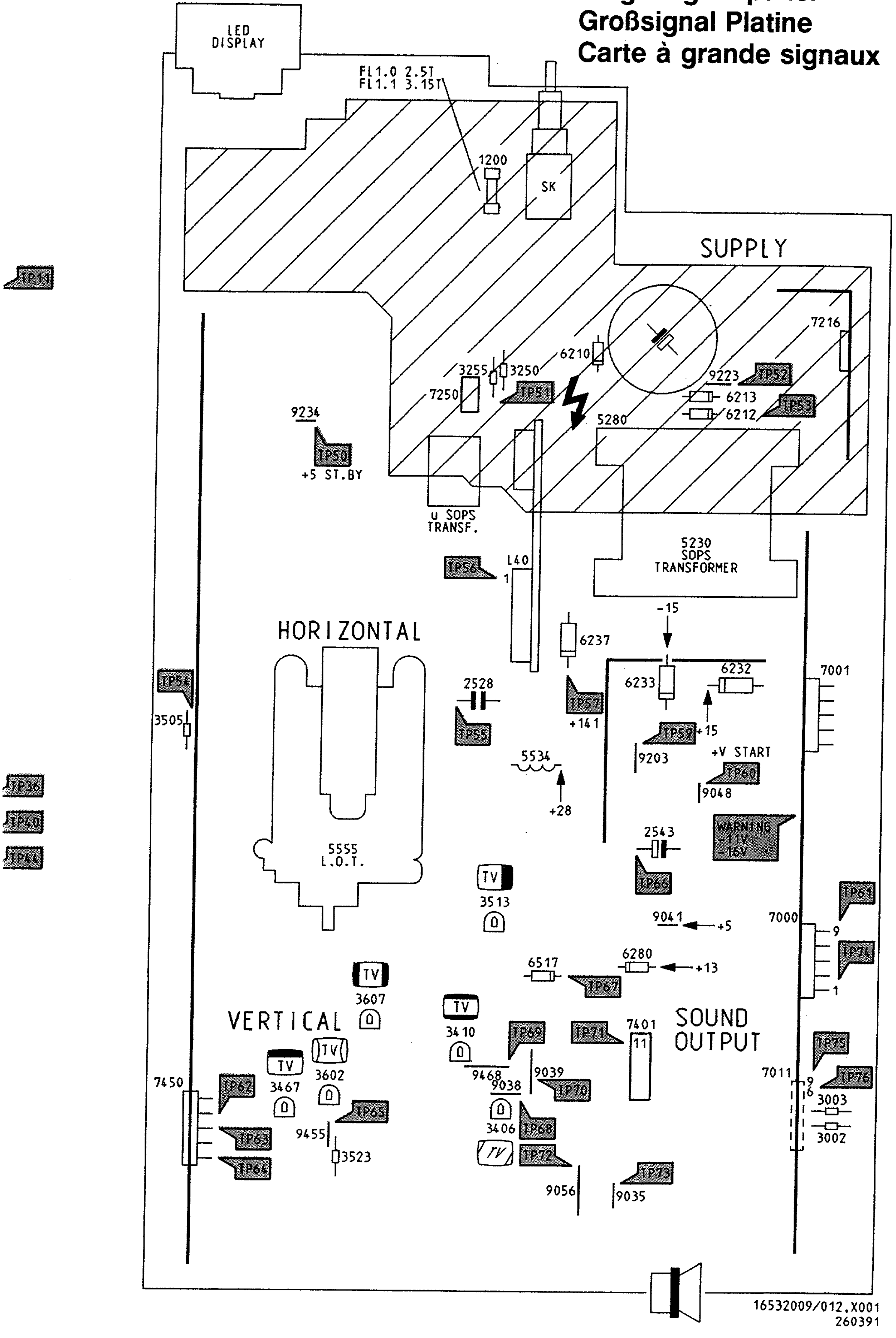


1023 PIP
J P6.25
1750 HIGH-END BOX
L P6.48
M P6.52
7430 TDA4680
E P6.30
1030 PTP
1599 CRT
7324 TDA4565
7365 TDA4650
7364 TDA4510
7366 TDA4660
CVBS/Y TXT
CS100 NIL RXD +13
CVBS/Y TXT SC50
BC INFO
FIL +13 FIL
VG2
FOCUS
EHT
G P6.42
7000 TDA1521Q
7001 TDA1521Q
7011 TDA1521Q
7009 LM833N
7002 LM833N
7005
7006
SQUEETER L
SQUEETER R
WOOFER
SURROUND R
SURROUND L
ONLY FL1.1
SOUND PROT.
PROT
EXT2
7680 TDA8425
PSEUDO
ST. LEVEL
7704 LM833
3680
3706
3720
B P6.10
7450 TDA3654
V.DEFL.
E/W PROT
5555
EHT
FOCUS
VG2
7504 7506
H.DEFL.
7400 TDA2579
100Hz
31250Hz
CS100
SC100 PIP/TAD4680
AQUA
FIL.
VTUN
POR
5V STBY
+V START
+5V STBY
POR
-VN

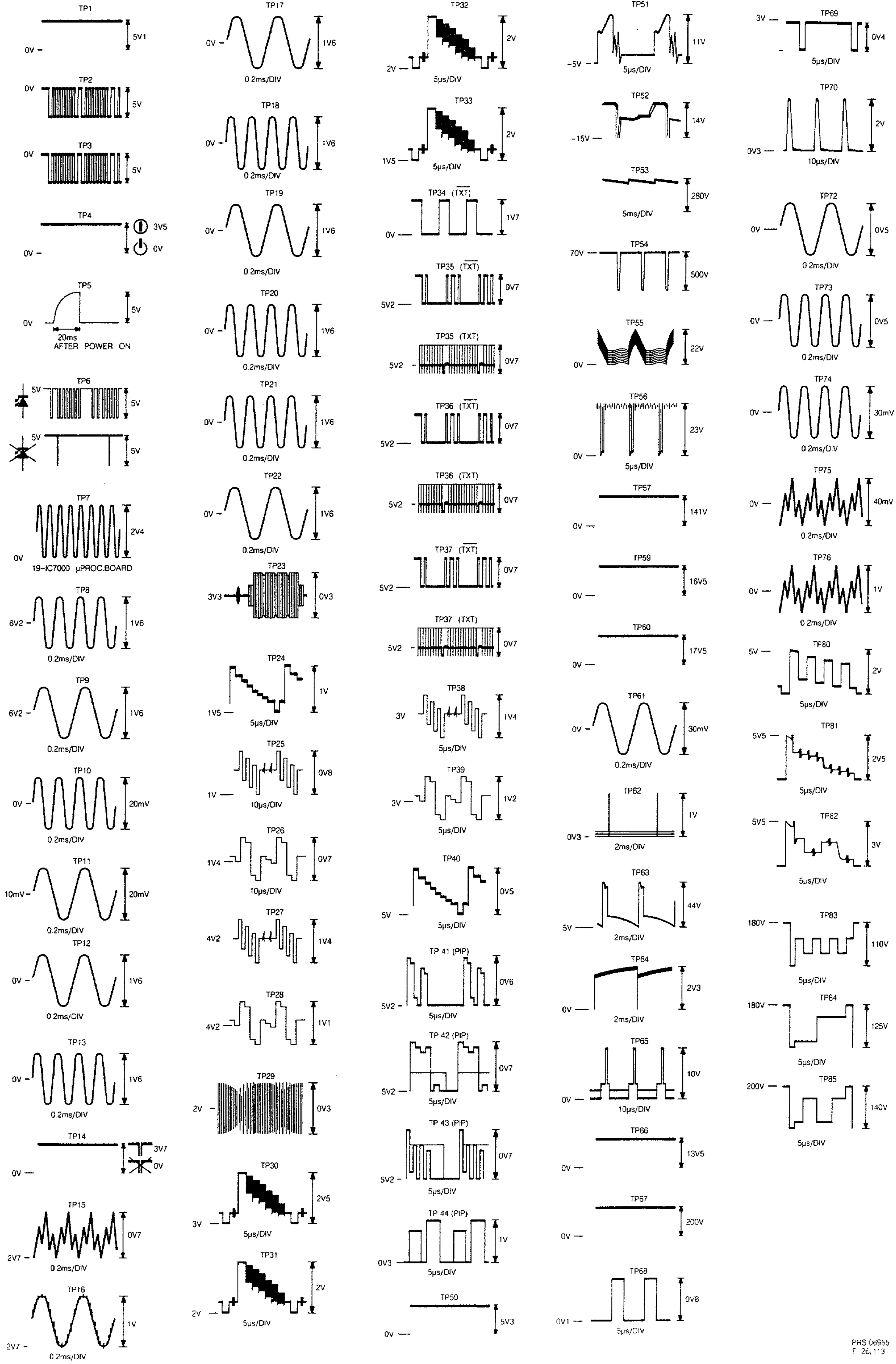
# Small signal panel
# Klein-signal Platte
# Carte à petite signaux


CONTROL
TP1
TP2
TP3
TP4
TP5
TP6
TP7
5012
1
2
3
9
12
19
uP
uP-MODULE
7137
X2404
EAROM
7680
TDA8425
AUDIO-CONTROL
TP8
TP9
TP10
TP11
2686
2684
3700
3722
3720
HEADPHONES AMPLIFIER
7704
LM833
-15
9741
SERVICE DEFAULT MODE
+15
SERVICE MODE
7258
HEF4094
TP20
TP21
9658
7622
HEF4052
7620
HEF4052
AUDIO-SOURCE-SELECT
AUDIO-RECORD-SOURCE-SELECT
9629
9670
TP19
7600
TDA8417
TP15
TP16
STEREO DECODER
8
7
TP12
TP13
S42
1
6
9623
TP18
9622
TP17
9123
TP22
9093
7630
LF353N
BUFFER
NICAM DECODER
TP14
AUDIO
TP23
7365
TDA4650
15
CHROMA-PROCES-SING
CHROMA-DELAY
73656
TDA4660
TP25
TP26
14
16
VIDEO
9316
+13
7324
TDA4565
9335
+33
TP27
TP28
2
1
CTI
2318
TP24
TP29
S43
1
FQ816ME
TUNER
A
7430
TDA4680
TP34
TP35
TP36
TP37
TP38
TP39
TP40
TP41
TP42
TP43
TP44
1
2
3
4
6
7
8
10
11
12
13
VIDEO CON.
TP31
TP33
9183
9266
7219
TEA6414
VIDEO SOURCE SELECT
11
TP32
9273
TP30
S17
S20
S21
S22
S16
PIP MODUL
HIGH-END BOX
7395
RGB
YUV
7635
LF353N
16532009/013.X001
120391

# Large signal panel
# Großsignal Platine
# Carte à grande signaux

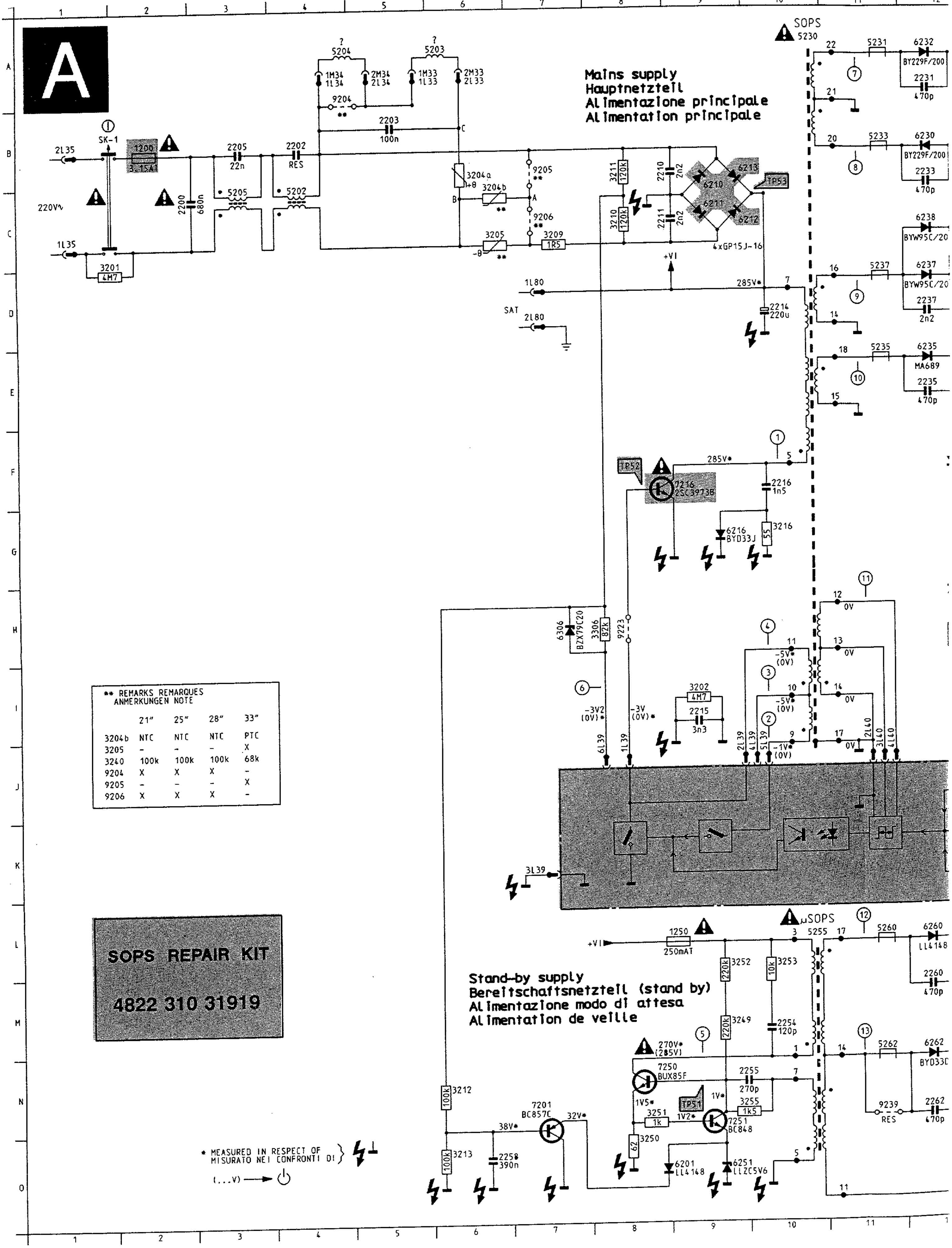

LED DISPLAY
FL1.0 2.5T
FL1.1 3.15T
1200
SK
SUPPLY
7216
6210
3255
3250
7250
TP51
9223
TP52
6213
6212
TP53
5280
9234
TP50
+5 ST.BY
u SOPS TRANSF.
5230 SOPS TRANSFORMER
TP11
TP56
L40
1
-15
HORIZONTAL
6237
6232
6233
7001
TP54
3505
2528
TP57
+141
TP55
TP59
+15
+V START
5534
9203
TP60
9048
TP36
TP40
TP44
+28
5555 L.O.T.
2543
WARNING -11V -16V
TP66
TV
3513
TP61
9041
+5
7000
9
TP74
1
6517
6280
+13
TP67
TV
3607
TV
VERTICAL
3410
TP69
TP71
7401
11
SOUND OUTPUT
TP75
TV
3602
TV
9468
9039
7011
TP76
7450
TP62
3467
9038
TP70
3003
TP65
3406
TP68
TP63
9455
3002
3523
TV
TP72
TP64
TP73
9056
9035

# Oscillograms



PRS 06955
T 26,1:3

# Powe


A
Mains supply
Hauptnetzteil
Alimentazione principale
Alimentation principale
Stand-by supply
Bereitschaftsnetzteil (stand by)
Alimentazione modo di attesa
Alimentation de veille
220V∿
2L35
1L35
SK-1
1200
3.15A
3201
4M7
2200
680n
2205
22n
5205
2202
RES
5202
5204
1M34
1L34
2M34
2L34
9204
5203
1M33
1L33
2M33
2L33
2203
100n
3204a
3204b
3205
9205
9206
3209
1R5
3211
120k
3210
120k
2210
2n2
2211
2n2
6210
6211
6212
6213
TP53
4xGP15J-16
+VI
1L80
SAT
2L80
285V*
2214
220u
SOPS
5230
22
21
20
16
14
18
15
5231
6232
BY229F/200
2231
470p
5233
6230
2233
6238
BYW95C/20
5237
6237
2237
2n2
5235
6235
MA689
2235
TP52
7216
2SC3973B
2216
1n5
6216
BYD33J
3216
5S
6306
BZX79C20
3306
82k
9223
-3V2
(0V)*
-3V
(0V)*
6L39
1L39
3202
4M7
2215
3n3
2L39
4L39
5L39
-5V*
(0V)
-1V*
(0V)
12
0V
13
17
2L40
3L40
4L40
3L39
µSOPS
5255
1250
250mAT
3252
220k
3253
10k
3249
220k
2254
120p
270V*
(285V)
7250
BUX85F
2255
270p
TP51
3255
1k5
1V5*
1V2*
1V*
3251
1k
7251
BC848
3250
62
6201
LL4148
6251
LLZC5V6
3212
100k
3213
100k
2258
390n
7201
BC857C
38V*
32V*
5260
6260
LL4148
2260
470p
5262
6262
BYD33D
9239
RES
2262
470p
* MEASURED IN RESPECT OF
MISURATO NEI CONFRONTI DI
(...V)

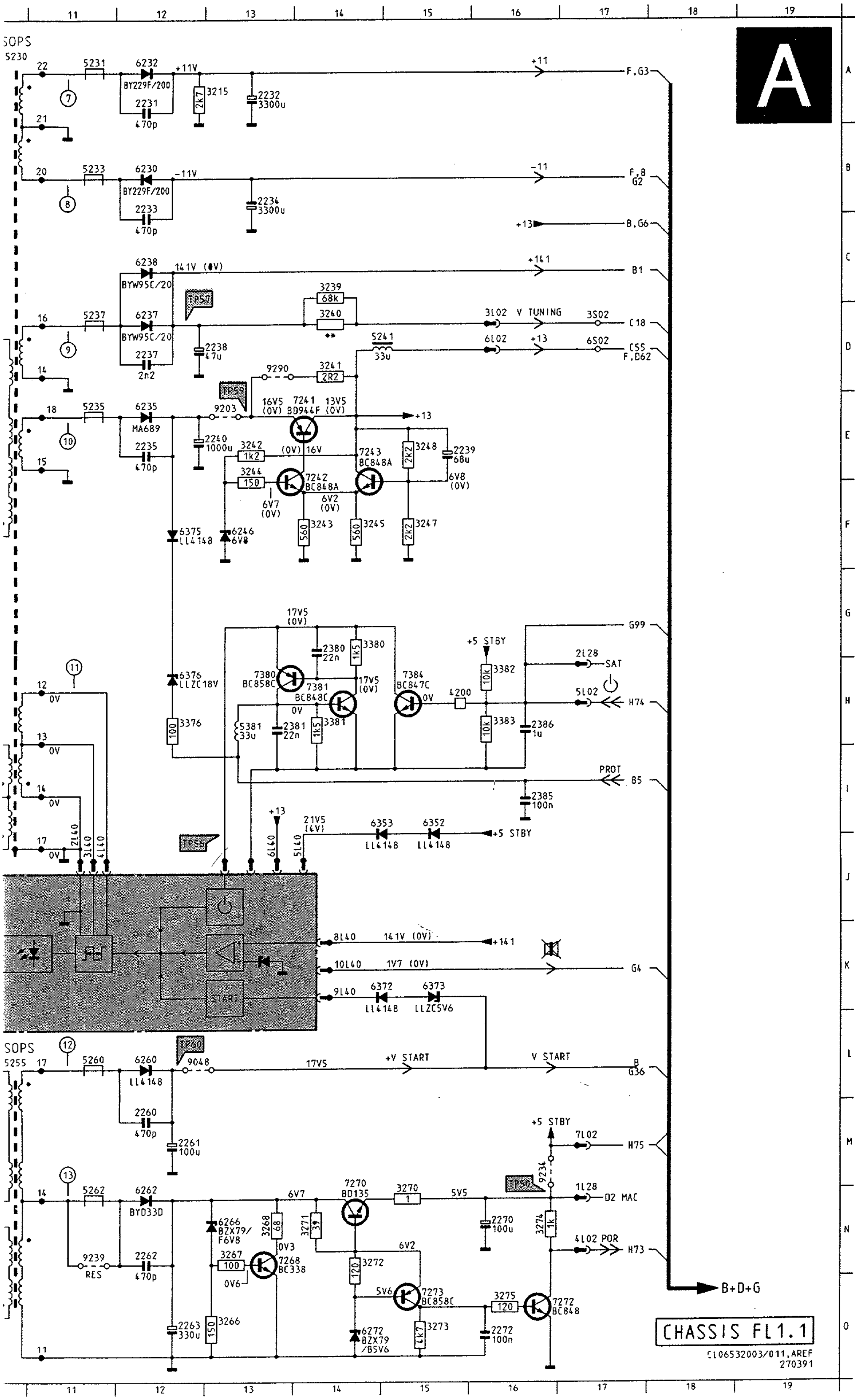
** REMARKS REMARQUES
ANMERKUNGEN NOTE

| | 21" | 25" | 28" | 33" |
|---|---|---|---|---|
| 3204b | NTC | NTC | NTC | PTC |
| 3205 | - | - | - | X |
| 3240 | 100k | 100k | 100k | 68k |
| 9204 | X | X | X | - |
| 9205 | - | - | - | X |
| 9206 | X | X | X | - |

SOPS REPAIR KIT

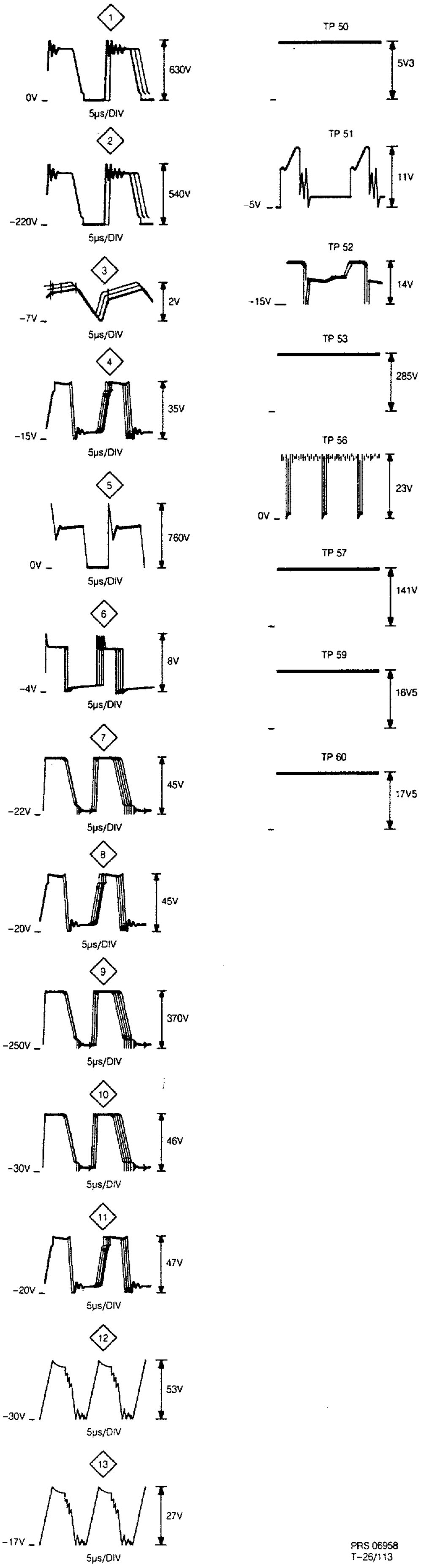
4822 310 31919

# Power supply Stromversorgung


A
SOPS
5230
22
21
20
5231
6232
BY229F/200
2231
470p
+11V
3215
2k7
2232
3300u
+11
F,G3
5233
6230
BY229F/200
2233
470p
-11V
2234
3300u
-11
F,B
G2
+13
B,G6
6238
BYW95C/20
14V1 (0V)
+141
B1
16
5237
6237
BYW95C/20
2237
2n2
TP57
2238
47u
3239
68k
3240
3L02
V TUNING
3S02
C18
5241
33u
6L02
+13
6S02
C55
F,D62
14
9290
3241
2R2
TP59
18
5235
6235
MA689
2235
470p
9203
16V5 (0V)
7241 BD944F
13V5 (0V)
+13
15
2240
1000u
3242
1k2
(0V) 16V
7243
BC848A
3248
2k2
2239
68u
6V8 (0V)
3244
150
7242
BC848A
6V7 (0V)
6V2 (0V)
6375
LL4148
6246
6V8
3243
560
3245
560
3247
2k2
17V5 (0V)
G99
2380
22n
3380
1k5
7380
BC858C
7381
BC848C
17V5 (0V)
+5 STBY
7384
BC847C
0V
3382
10k
2L28
SAT
6376
LLZC18V
4200
5L02
H74
12
0V
13
0V
14
0V
17
0V
5381
33u
2381
22n
3381
1k5
3383
10k
2386
1u
3376
100
PROT
B5
2385
100n
+13
21V5 (4V)
6353
LL4148
6352
LL4148
+5 STBY
2L40
3L40
4L40
TP56
6L40
5L40
8L40
14V1 (0V)
+141
10L40
1V7 (0V)
G4
9L40
6372
LL4148
6373
LLZC5V6
START
SOPS
5255
17
5260
6260
LL4148
TP60
9048
17V5
+V START
V START
B
G36
2260
470p
2261
100u
+5 STBY
7L02
H75
9234
TP50
14
5262
6262
BYD33D
6V7
7270
BD135
3270
1
5V5
1L28
D2 MAC
6266
BZX79/F6V8
3268
68
3271
39
2270
100u
3274
1k
4L02 POR
H73
9239
RES
2262
470p
3267
100
0V3
7268
BC338
0V6
6V2
3272
120
5V6
7273
BC858C
3275
120
7272
BC848
B+D+G
3266
150
2263
330u
6272
BZX79/B5V6
3273
4k7
2272
100n
11
CHASSIS FL1.1
CL06532003/011.AREF
270391
11
12
13
14
15
16
17
18
19

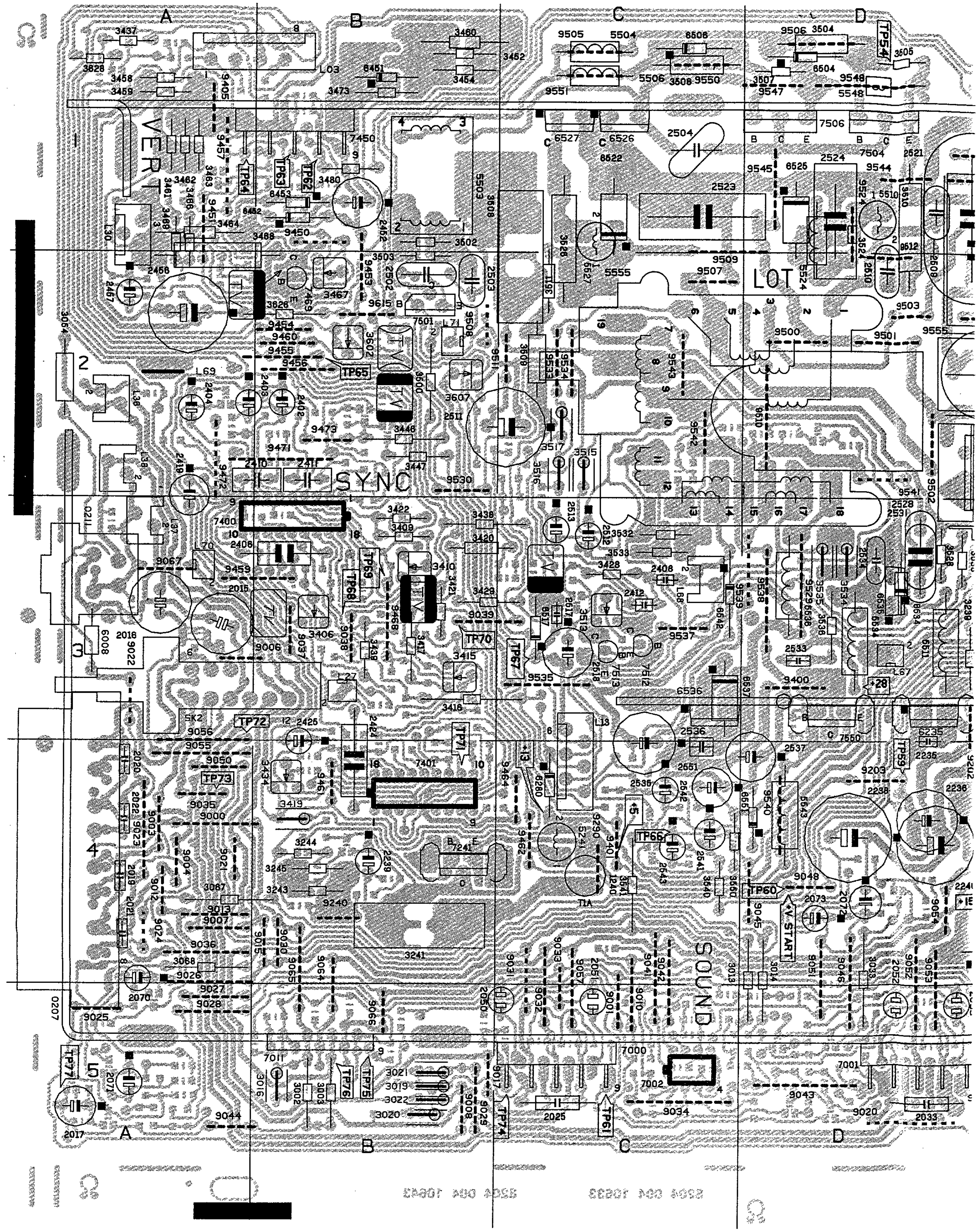
| | |
|---|---|
| 1200 | B 2 |
| 1250 | L 9 |
| 2200 | C 2 |
| 2202 | B 4 |
| 2203 | B 5 |
| 2205 | B 3 |
| 2210 | B 9 |
| 2211 | C 9 |
| 2214 | D10 |
| 2215 | I 9 |
| 2216 | F10 |
| 2231 | A12 |
| 2232 | A13 |
| 2233 | B12 |
| 2234 | B13 |
| 2235 | E12 |
| 2237 | D12 |
| 2238 | D12 |
| 2239 | E15 |
| 2240 | E12 |
| 2254 | M10 |
| 2255 | N 9 |
| 2258 | O 6 |
| 2260 | M12 |
| 2261 | M12 |
| 2262 | N12 |
| 2263 | O12 |
| 2270 | N16 |
| 2272 | O16 |
| 2380 | G14 |
| 2381 | H13 |
| 2385 | I16 |
| 2386 | H16 |
| 3201 | C 1 |
| 3202 | I 9 |
| 3204 | C 6 |
| 3204 | B 6 |
| 3205 | C 6 |
| 3209 | C 7 |
| 3210 | C 8 |
| 3211 | B 8 |
| 3212 | N 6 |
| 3213 | O 6 |
| 3215 | A13 |
| 3216 | G10 |
| 3239 | C14 |
| 3240 | D14 |
| 3241 | D14 |
| 3242 | E13 |
| 3243 | F14 |
| 3244 | E13 |
| 3245 | F14 |
| 3247 | F15 |
| 3248 | E15 |
| 3249 | M 9 |
| 3250 | O 8 |
| 3251 | N 8 |
| 3252 | L 9 |
| 3253 | L10 |
| 3255 | N 9 |
| 3266 | O13 |
| 3267 | N13 |
| 3268 | N13 |
| 3270 | N15 |
| 3271 | N14 |
| 3272 | N14 |
| 3273 | O15 |
| 3274 | N16 |
| 3275 | O16 |
| 3306 | H 8 |
| 3376 | H12 |
| 3380 | G14 |
| 3381 | H14 |
| 3382 | H16 |
| 3383 | H16 |
| 4L02 | N17 |
| 4200 | H15 |
| 5202 | C 4 |
| 5203 | A 6 |
| 5204 | A 4 |
| 5205 | C 3 |
| 5230 | A10 |
| 5231 | A11 |
| 5233 | B11 |
| 5235 | E11 |
| 5237 | D11 |
| 5241 | D14 |
| 5255 | L10 |
| 5260 | L11 |
| 5262 | N11 |
| 5381 | H13 |
| 6201 | O 9 |
| 6210 | C 9 |
| 6211 | C 9 |
| 6212 | C 9 |
| 6213 | B 9 |
| 6216 | G 9 |
| 6230 | B12 |
| 6232 | A12 |
| 6235 | E12 |
| 6237 | D12 |
| 6238 | C12 |
| 6246 | F13 |
| 6251 | O 9 |
| 6260 | L12 |
| 6262 | N12 |
| 6266 | N13 |
| 6272 | O14 |
| 6306 | H 7 |
| 6352 | I15 |
| 6353 | I14 |
| 6372 | K14 |
| 6373 | K15 |
| 6375 | F12 |
| 6376 | H12 |
| 7201 | N 7 |
| 7216 | F 9 |
| 7241 | E14 |
| 7242 | E14 |
| 7243 | E14 |
| 7250 | N 8 |
| 7251 | N 9 |
| 7268 | N13 |
| 7270 | M14 |
| 7272 | O16 |
| 7273 | O15 |
| 7380 | H13 |
| 7381 | H14 |
| 7384 | H15 |
| 9048 | L12 |
| 9203 | E13 |
| 9204 | A 4 |
| 9205 | B 7 |
| 9206 | C 7 |
| 9223 | H 8 |
| 9234 | M16 |
| 9239 | N11 |
| 9290 | D13 |

# L'alimentation

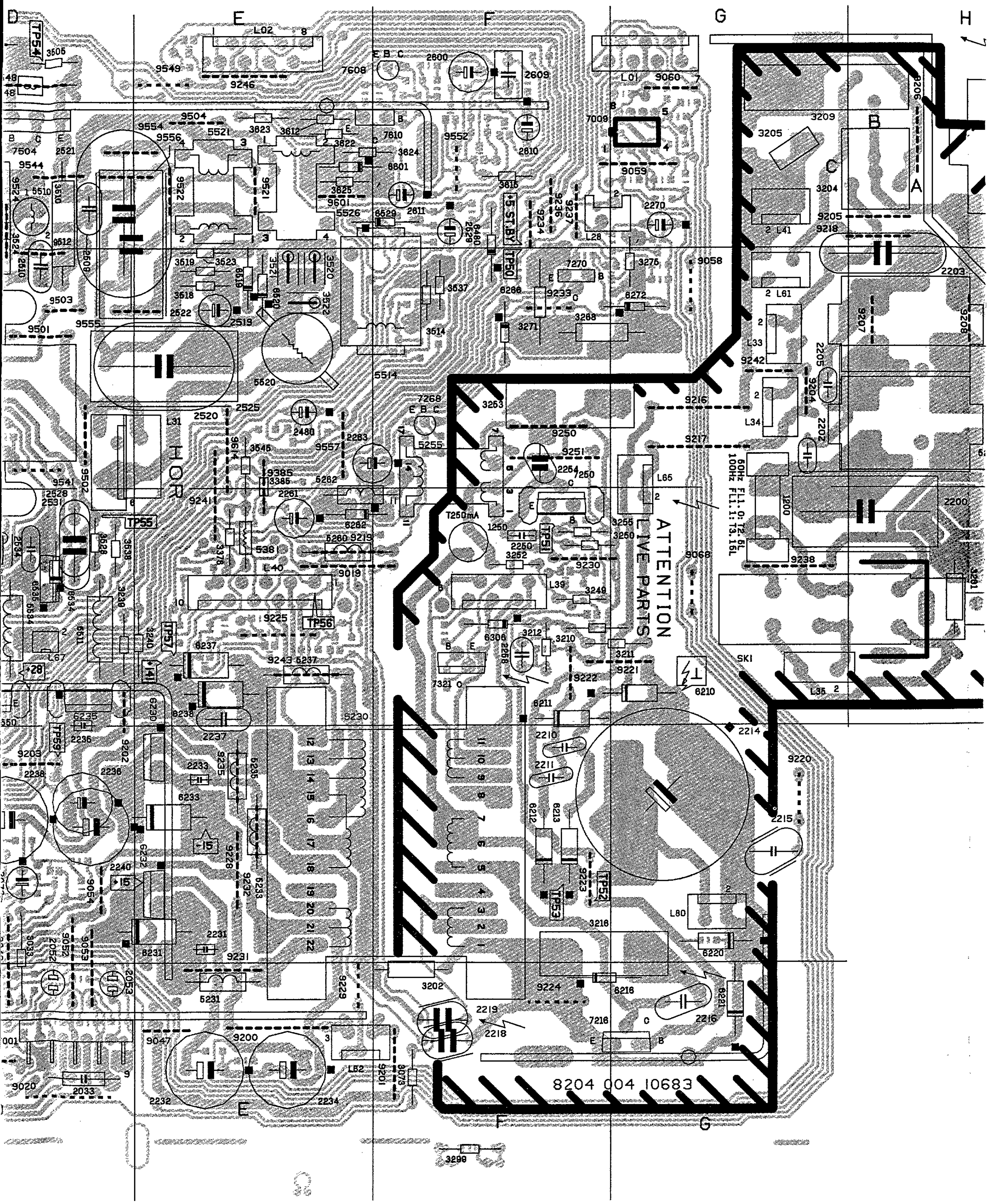


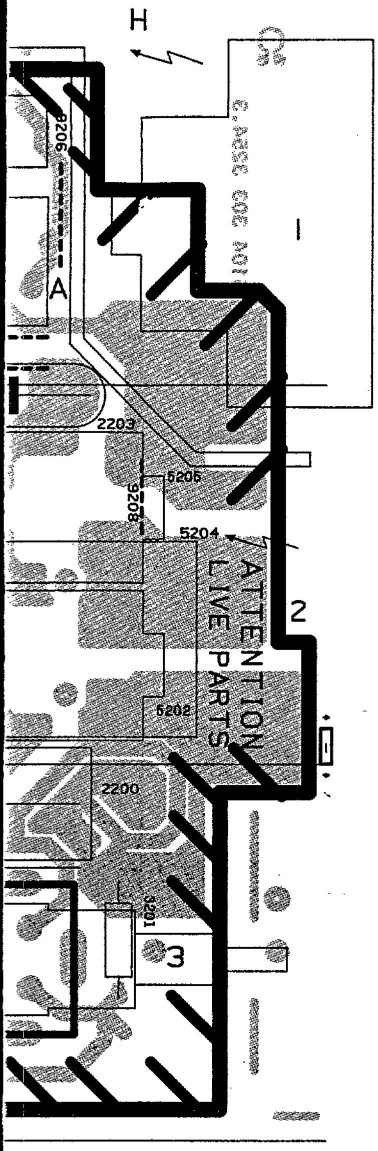
PRS 06958
T-26/113

# Large signal panel Groß-signal Platine


A
B
C
D
1
2
3
4
5
VERT
SYNC
LOT
SOUND
TP54
TP55
TP59
TP60
TP61
TP62
TP63
TP64
TP65
TP66
TP67
TP68
TP69
TP70
TP71
TP72
TP73
TP74
TP75
TP76
TP77
7400
7401
7450
7501
7504
7506
7550
7000
7001
7002
7011
7241
7512
7513
+V-START
LO3
L30
L36
L37
L38
L67
L69
L70
L71
L86
SK2
3241
9500
9501
9503
9555
6536
6527
6526
2504
2523
2524
5503
5504
5505
5506
5524
5555
5510
9505
9506
3504
3505
3437
3628
3458
3459
3460
3452
3454
3473
6451
9405

# Platine forts signeaux


D
E
F
G
H
TP54
L02
9549
9246
7608
2600
2609
L01
9060
7009
9059
9504
9554
9556
5521
3823
3612
3822
7610
3624
9552
2610
6801
7504
9544
2521
3615
+5 ST.BY
TP50
9237
9236
9234
2270
3625
9601
5526
6529
2611
6480
2629
L28
3205
3209
3204
9205
9218
L41
9522
9521
9512
2508
3519
3523
3518
2522
2519
3520
3522
3537
6286
9233
7270
3276
6272
3268
9058
L61
2203
9503
9501
9555
5520
3514
5514
3271
L33
9242
9207
9208
2205
9204
2202
7268
E B C
3253
9216
9217
L34
2520
2525
2480
L31
HOR
9614
3646
9557
2263
5255
9250
9251
2264
7250
L65
60Hz FL1.0: T2.6L
100Hz FL1.1: T3.15L
1200
2200
9541
9502
2528
2531
9385
3385
5262
9241
2261
6262
T250mA
1250
2250
3252
TP51
3255
3250
ATTENTION
LIVE PARTS
TP55
3628
3638
3378
5381
5260
9219
9019
9230
9068
9238
3261
L40
L39
3249
6636
6634
6684
6611
3239
3240
TP57
9225
TP56
6306
2268
3212
3210
3211
9221
L67
+28
6237
9243
5237
7321
9222
6210
SKI
L35
6238
6230
2237
5230
6211
2214
6235
2236
TP59
9203
9202
2238
2233
9235
6233
2210
2211
9220
6212
6213
2215
-15
9228
9232
6232
2240
+15
9054
9223
TP52
TP53
L80
3033
9052
2052
9053
6231
2231
9231
2053
3216
6220
3202
9229
9224
6216
6221
5231
2219
2218
7216
2216
9047
9200
L62
9201
3079
9020
2033
2232
2234
8204 004 10683
3299



| | |
|---|---|
| 0207 | A4 |
| 0211 | A3 |
| 039 | H5 |
| 040 | H4 |
| L01 | F1 |
| L02 | E1 |
| L03 | A1 |
| L13 | C4 |
| L27 | B3 |
| L28 | G1 |
| L30 | A1 |
| L31 | E2 |
| L33 | G2 |
| L34 | G2 |
| L35 | G3 |
| L36 | A2 |
| L37 | A3 |
| L38 | A2 |
| L39 | F3 |
| L40 | E3 |
| L41 | G1 |
| L61 | G2 |
| L62 | E5 |
| L65 | G2 |
| L67 | D3 |
| L68 | C3 |
| L69 | A2 |
| L70 | A3 |
| L71 | B2 |
| L80 | G4 |
| SK1 | G3 |
| SK2 | B3 |
| 1200 | G3 |
| 1240 | C4 |
| 1250 | F3 |
| 2015 | A3 |
| 2016 | A3 |
| 2017 | A5 |
| 2019 | A4 |
| 2020 | A4 |
| 2021 | A4 |
| 2022 | A4 |
| 2025 | C5 |
| 2033 | D5 |
| 2050 | C5 |
| 2051 | C5 |
| 2052 | D5 |
| 2053 | D5 |
| 2070 | A4 |
| 2071 | A5 |
| 2072 | D4 |
| 2073 | D4 |
| 2200 | H3 |
| 2202 | G2 |
| 2203 | H2 |
| 2205 | G2 |
| 2210 | F4 |
| 2211 | F4 |
| 2214 | G4 |
| 2215 | G4 |
| 2216 | G5 |
| 2218 | F5 |
| 2219 | F5 |
| 2231 | E4 |
| 2232 | E5 |
| 2233 | E4 |
| 2234 | E5 |
| 2235 | D3 |
| 2236 | D4 |
| 2237 | E3 |
| 2238 | D4 |
| 2239 | B4 |
| 2240 | D4 |
| 2250 | F3 |
| 2254 | F2 |
| 2258 | F3 |
| 2261 | E3 |
| 2263 | E2 |
| 2270 | G1 |
| 2321 | H5 |
| 2351 | H4 |
| 2361 | H4 |
| 2372 | H4 |
| 2376 | H4 |
| 2402 | B2 |
| 2403 | A2 |
| 2404 | A2 |
| 2406 | B3 |
| 2408 | C3 |
| 2410 | B2 |
| 2411 | B2 |
| 2412 | C3 |
| 2419 | A2 |
| 2424 | B4 |
| 2425 | B4 |
| 2452 | B1 |
| 2456 | A2 |
| 2457 | A2 |
| 2480 | E2 |
| 2502 | B2 |
| 2503 | B2 |
| 2504 | C1 |
| 2509 | D1 |
| 2510 | D2 |
| 2511 | C2 |
| 2512 | C3 |
| 2513 | C3 |
| 2517 | C3 |
| 2518 | C3 |
| 2519 | E2 |
| 2520 | E2 |
| 2521 | D1 |
| 2522 | D1 |
| 2523 | C1 |
| 2524 | D1 |
| 2525 | E2 |
| 2528 | D3 |
| 2529 | F1 |
| 2531 | D3 |
| 2533 | D3 |
| 2534 | D3 |
| 2535 | C4 |
| 2536 | C4 |
| 2537 | D4 |
| 2541 | C4 |
| 2542 | C4 |
| 2543 | C4 |
| 2551 | C4 |
| 2600 | F1 |
| 2609 | F1 |
| 2610 | F1 |
| 2611 | F1 |
| 3002 | B5 |
| 3003 | B5 |
| 3013 | D4 |
| 3014 | D4 |
| 3016 | B5 |
| 3019 | B5 |
| 3020 | B5 |
| 3021 | B5 |
| 3022 | B5 |
| 3033 | D4 |
| 3054 | A2 |
| 3067 | A4 |
| 3068 | A4 |
| 3073 | F5 |
| 3201 | H3 |
| 3202 | F5 |
| 3204 | H1 |
| 3205 | G1 |
| 3209 | G1 |
| 3210 | F3 |
| 3211 | G3 |
| 3212 | F3 |
| 3216 | F4 |
| 3239 | D3 |
| 3240 | E3 |
| 3241 | B4 |
| 3243 | B4 |
| 3244 | B4 |
| 3245 | B4 |
| 3249 | F3 |
| 3250 | F3 |
| 3252 | F3 |
| 3253 | F2 |
| 3255 | F3 |
| 3268 | F2 |
| 3271 | F2 |
| 3275 | G2 |
| 3299 | F5 |
| 3300 | H5 |
| 3308 | H5 |
| 3310 | H5 |
| 3313 | H5 |
| 3314 | H5 |
| 3315 | H5 |
| 3331 | H4 |
| 3332 | H4 |
| 3351 | H4 |
| 3357 | H4 |
| 3358 | H4 |
| 3368 | H4 |
| 3369 | H4 |
| 3371 | H4 |
| 3374 | H4 |
| 3376 | E3 |
| 3385 | E2 |
| 3406 | B3 |
| 3409 | B3 |
| 3410 | B3 |
| 3415 | B3 |
| 3416 | B3 |
| 3417 | B3 |
| 3419 | B4 |
| 3420 | B3 |
| 3421 | B3 |
| 3422 | B3 |
| 3428 | C3 |
| 3429 | B3 |
| 3434 | B4 |
| 3437 | A1 |
| 3438 | B3 |
| 3439 | B3 |
| 3446 | B2 |
| 3447 | B2 |
| 3452 | B1 |
| 3454 | B1 |
| 3458 | A1 |
| 3459 | A1 |
| 3460 | B1 |
| 3461 | A1 |
| 3462 | A1 |
| 3463 | A1 |
| 3464 | A1 |
| 3466 | A1 |
| 3467 | B2 |
| 3468 | A2 |
| 3469 | A1 |
| 3473 | B1 |
| 3480 | B1 |
| 3500 | B2 |
| 3502 | B1 |
| 3503 | B2 |
| 3504 | D1 |
| 3505 | D1 |
| 3506 | C1 |
| 3507 | D1 |
| 3508 | C2 |
| 3509 | C2 |
| 3510 | D1 |
| 3511 | C2 |
| 3513 | C3 |
| 3514 | F2 |
| 3515 | C2 |
| 3516 | C2 |
| 3517 | C2 |
| 3518 | E2 |
| 3519 | E2 |
| 3520 | E2 |
| 3521 | E2 |
| 3522 | E2 |
| 3523 | E2 |
| 3524 | D1 |
| 3526 | C1 |
| 3528 | D3 |
| 3532 | C3 |
| 3533 | C3 |
| 3534 | D3 |
| 3535 | D3 |
| 3536 | D3 |
| 3537 | F2 |
| 3538 | D3 |
| 3540 | C4 |
| 3541 | C4 |
| 3545 | E2 |
| 3550 | C4 |
| 3602 | B2 |
| 3607 | B2 |
| 3612 | E1 |
| 3615 | F1 |
| 3622 | E1 |
| 3623 | E1 |
| 3624 | E1 |
| 3625 | E1 |
| 3626 | B2 |
| 3628 | A1 |
| 5202 | H2 |
| 5204 | H2 |
| 5205 | H2 |
| 5230 | F4 |
| 5231 | E5 |
| 5233 | E4 |
| 5235 | E4 |
| 5237 | E3 |
| 5241 | C4 |
| 5255 | F3 |
| 5260 | E3 |
| 5262 | E3 |
| 5308 | H5 |
| 5310 | H5 |
| 5381 | E3 |
| 5503 | B1 |
| 5504 | C1 |
| 5506 | C1 |
| 5510 | D1 |
| 5511 | D3 |
| 5514 | F2 |
| 5520 | E2 |
| 5521 | E1 |
| 5524 | D1 |
| 5526 | E1 |
| 5527 | C2 |
| 5534 | D3 |
| 5536 | D3 |
| 5543 | D4 |
| 5548 | D1 |
| 5555 | D3 |
| 6008 | A3 |
| 6210 | G3 |
| 6211 | F3 |
| 6212 | F4 |
| 6213 | F4 |
| 6216 | F5 |
| 6220 | G4 |
| 6221 | G5 |
| 6230 | E4 |
| 6231 | E4 |
| 6232 | E4 |
| 6233 | E4 |
| 6235 | D3 |
| 6237 | E3 |
| 6238 | E3 |
| 6262 | E3 |
| 6266 | F2 |
| 6272 | G2 |
| 6280 | C4 |
| 6306 | F3 |
| 6308 | H5 |
| 6312 | H5 |
| 6319 | H5 |
| 6451 | B1 |
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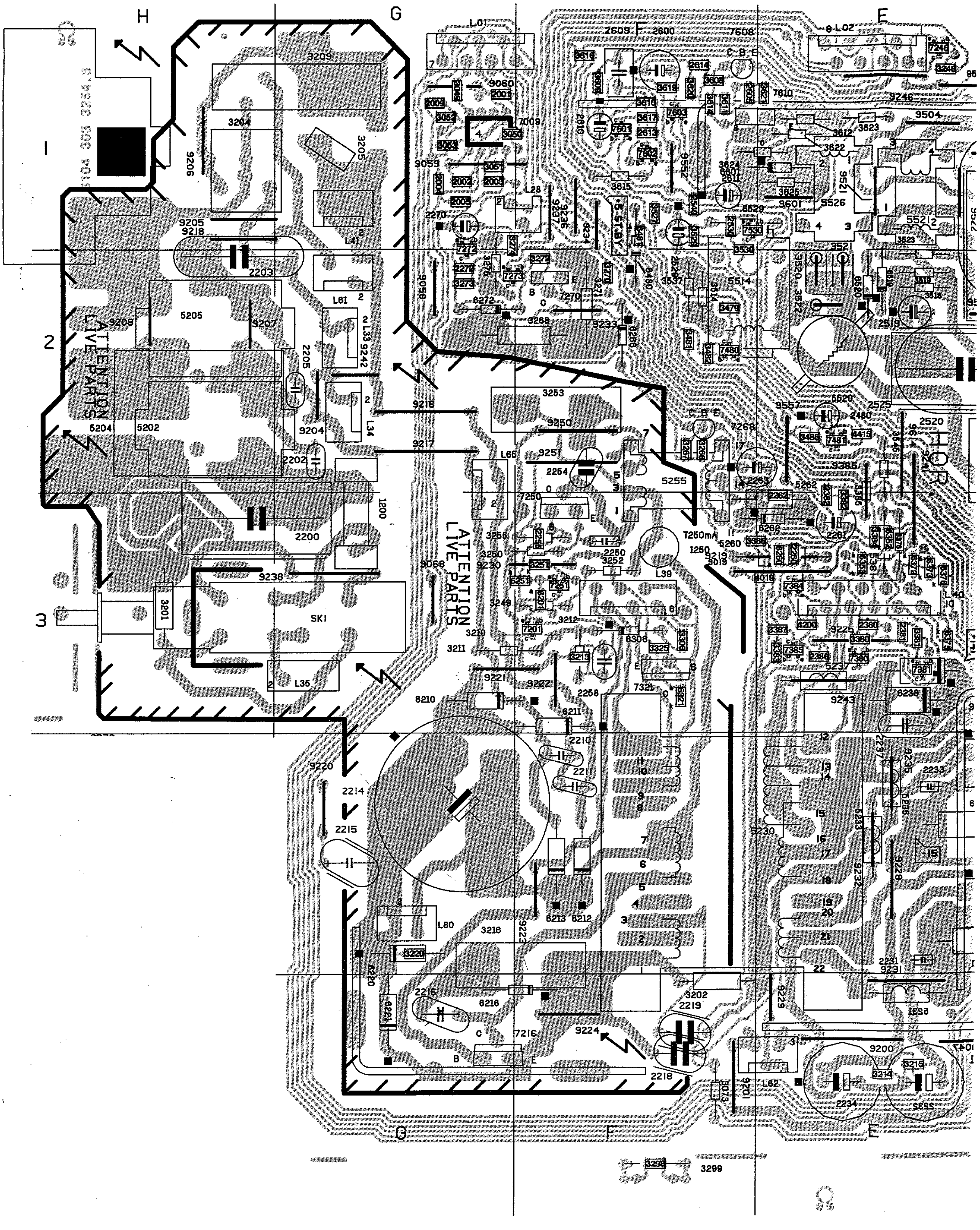
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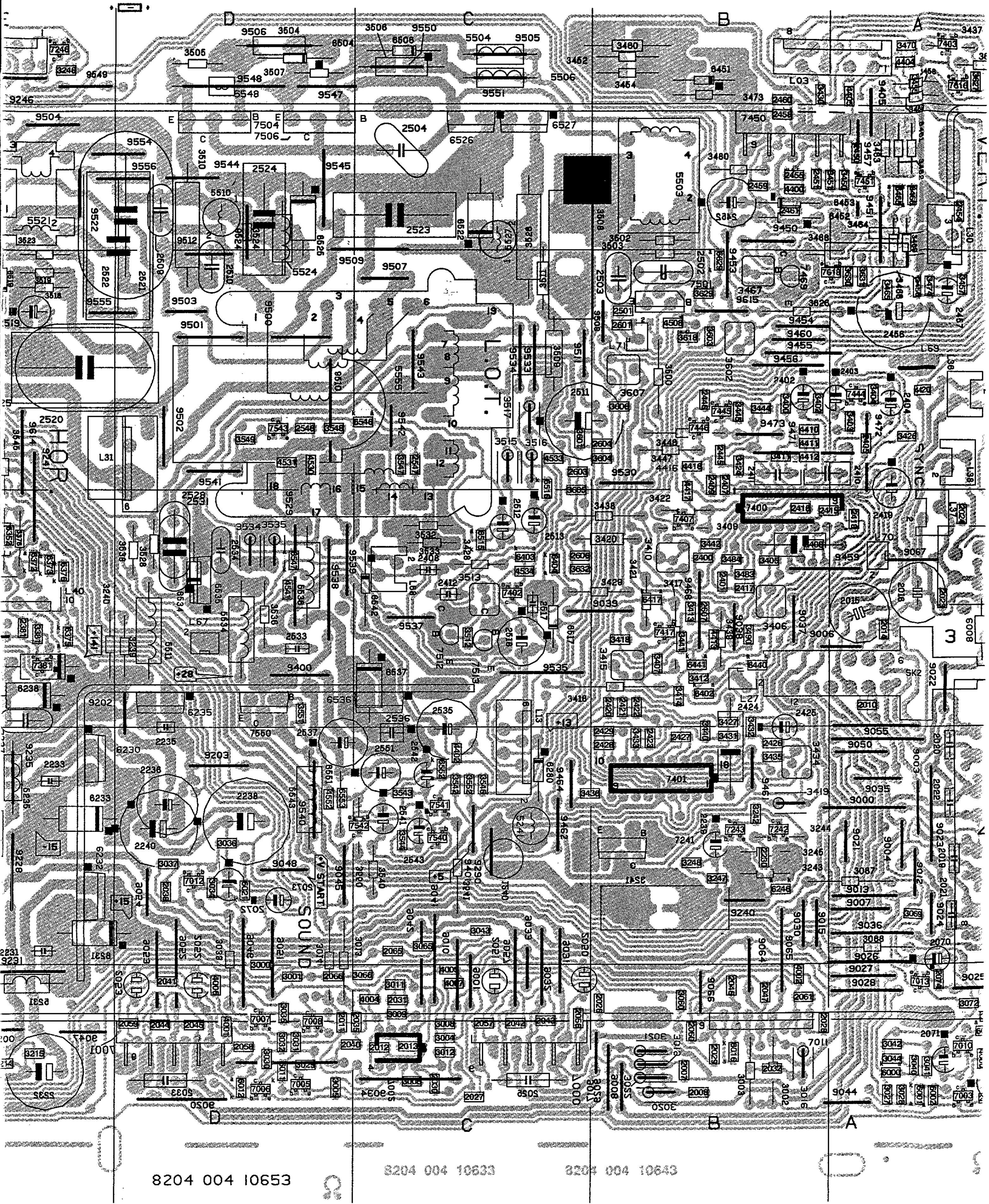
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D
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HOR
SYNC
SOUND
START
SK2
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L03
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+141
+5
+V
-15
+15
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8204 004 10633

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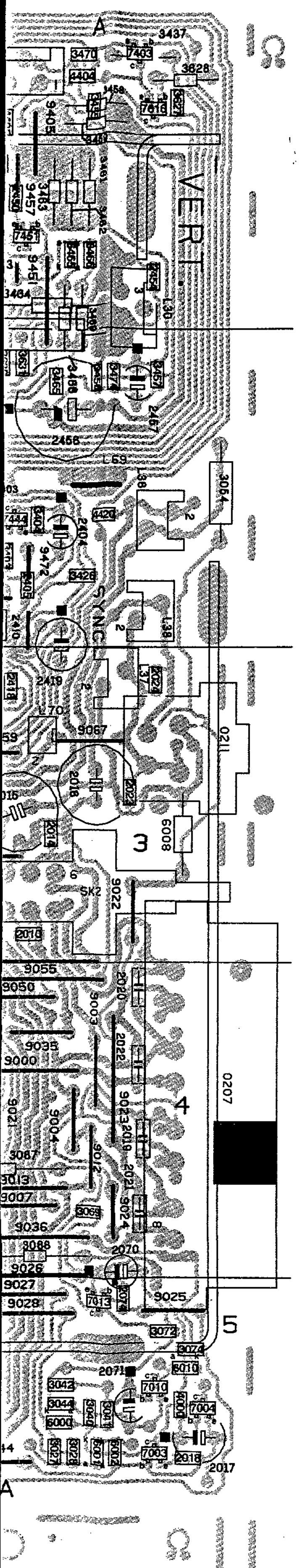

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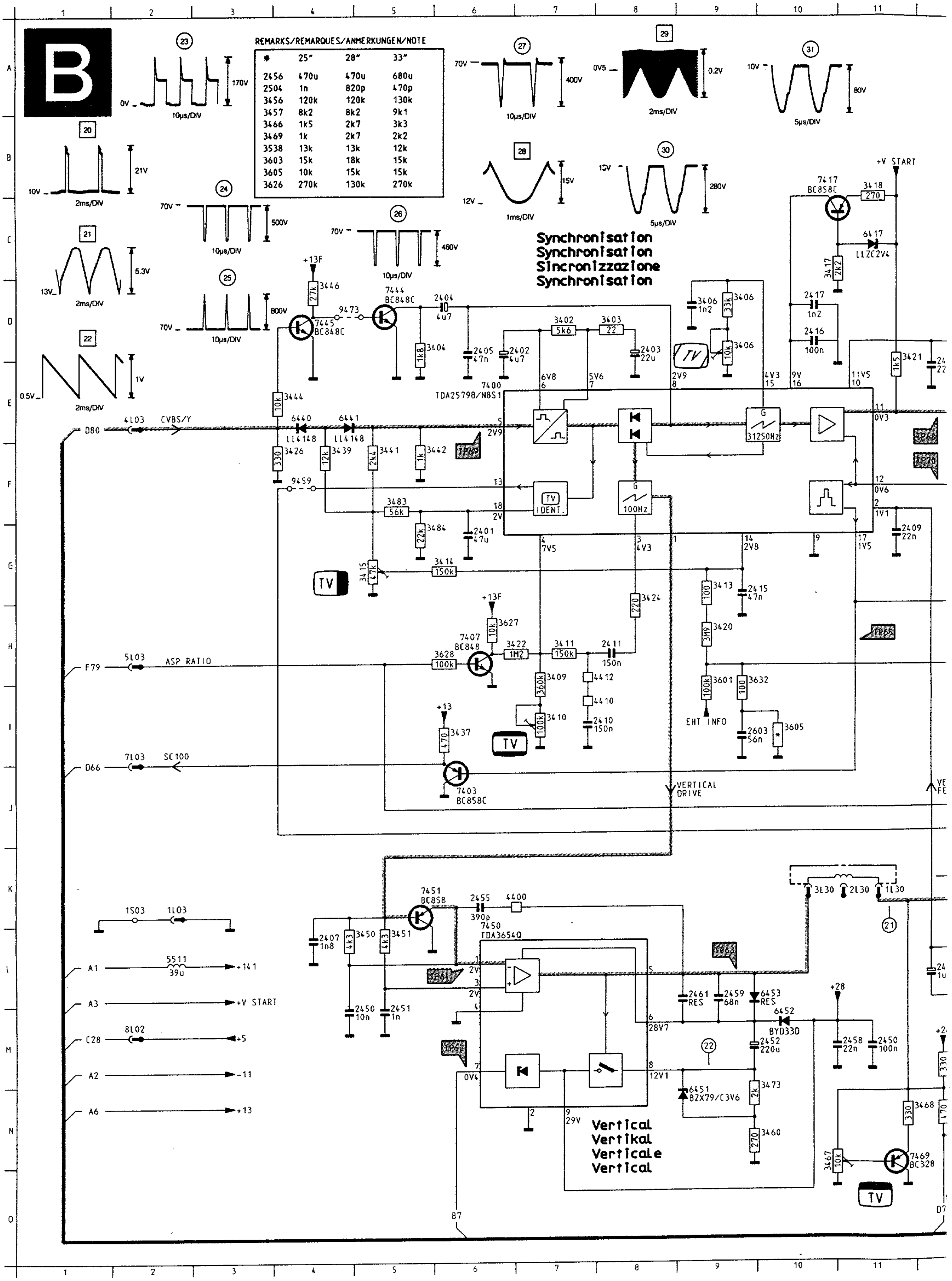
9507 C2
9508 B2
9509 C1
9510 D2
9511 C2
9512 D2
9521 E1
9522 E1
9524 D1
9529 D3
9530 B2
9533 C2
9534 C2
9535 C3
9537 C3
9538 D3
9539 D3
9540 D4
9541 D2
9542 C2
9543 C2
9544 D1
9545 D1
9547 D1
9548 D1
9549 E1
9550 C1
9551 C1
9552 F1
9554 D1
9555 E2
9556 D1
9557 E2
9601 E1
9614 E2
9615 B2

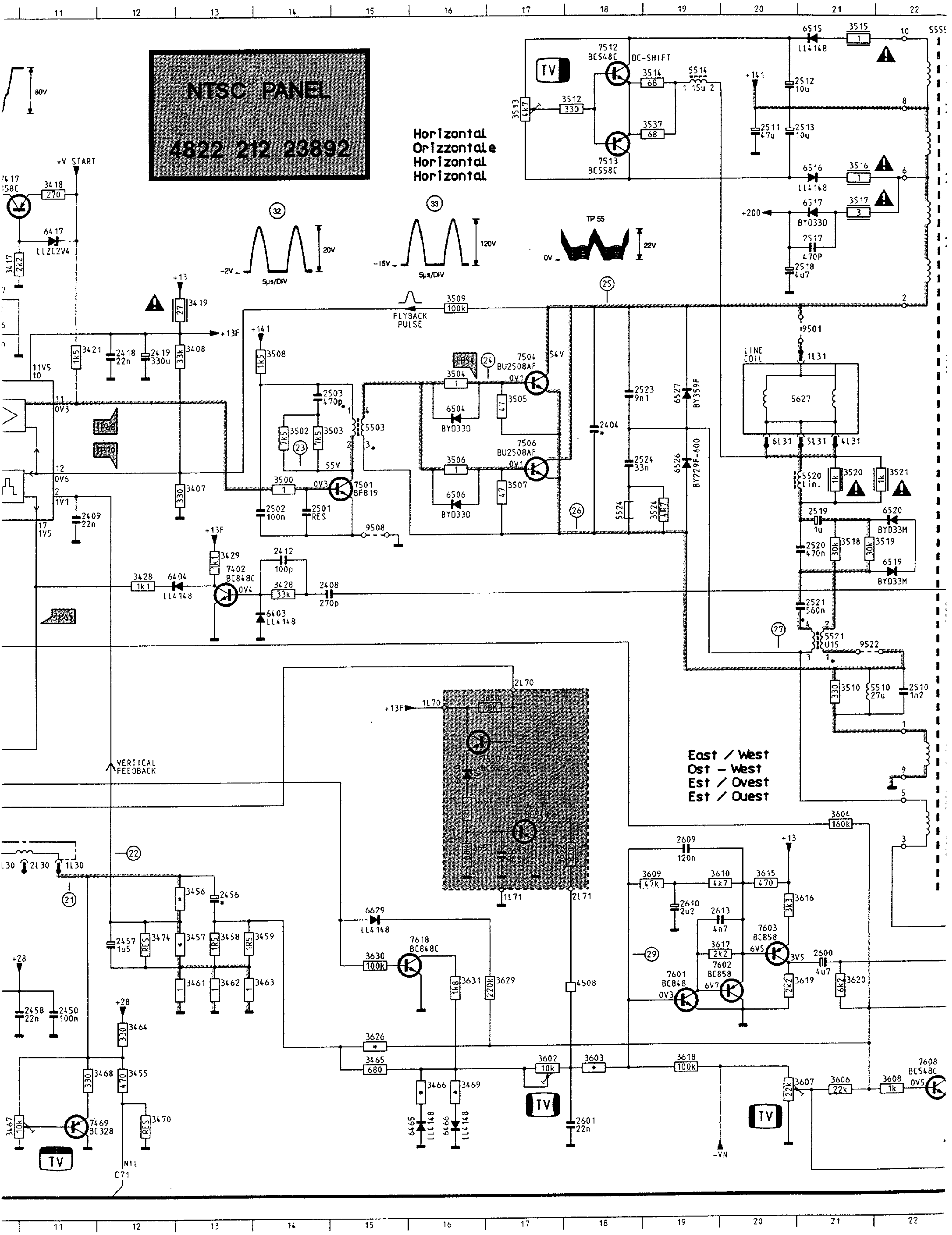
# Synchronization Synchronisierung

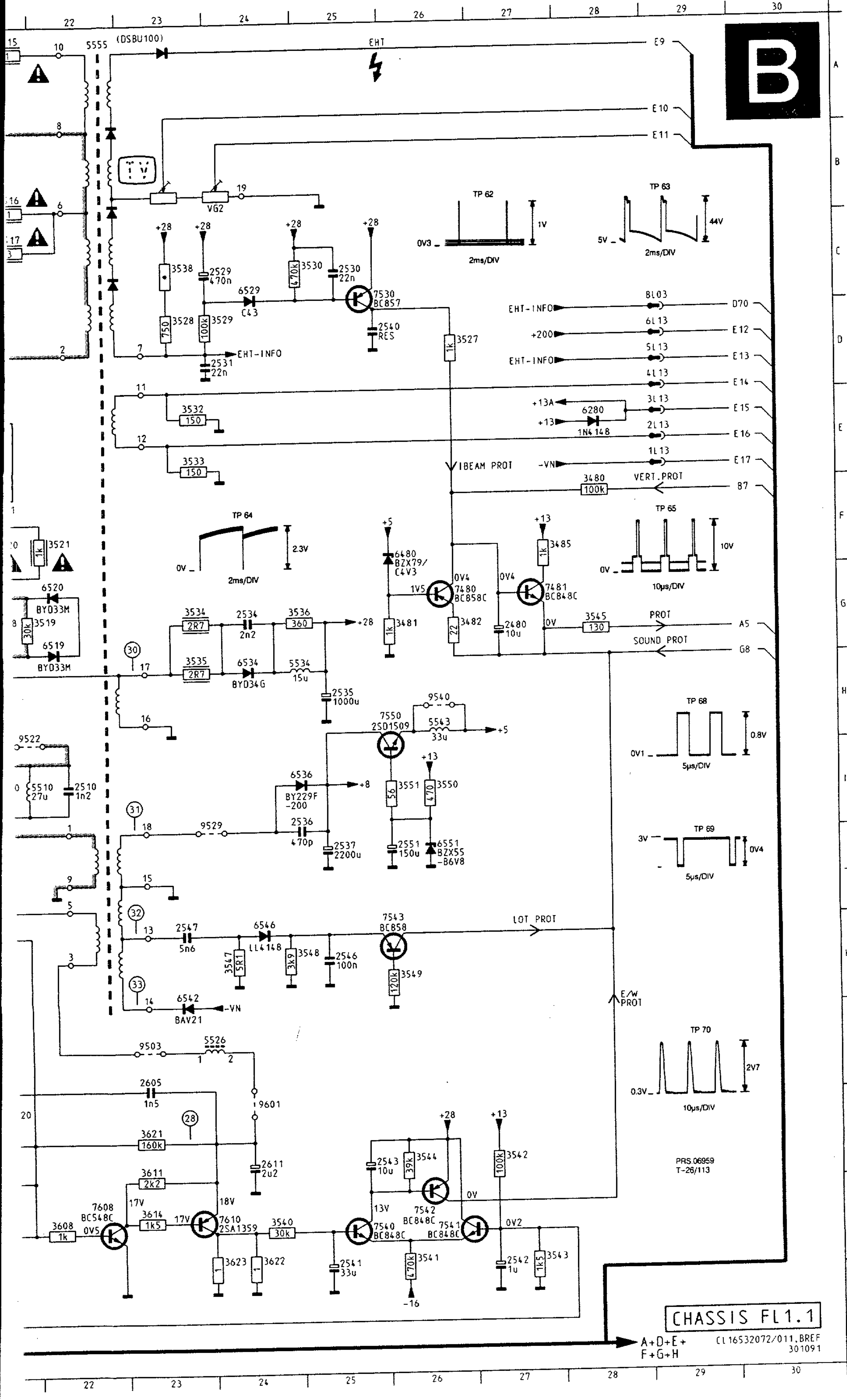

B
1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
23
0V
10µs/DIV
170V
20
21V
10V
2ms/DIV
21
5.3V
13V
2ms/DIV
22
1V
0.5V
2ms/DIV
24
70V
10µs/DIV
500V
25
800V
70V
10µs/DIV
26
70V
460V
10µs/DIV
27
70V
400V
10µs/DIV
28
15V
12V
1ms/DIV
29
0V5
0.2V
2ms/DIV
30
15V
280V
5µs/DIV
31
10V
80V
5µs/DIV
Synchronisation
Synchronisation
Sincronizzazione
Synchronisation
+V START
7417
BC858C
3418
270
6417
LLZC2V4
3417
2k2
2417
1n2
2416
100n
3421
1k5
+13F
3446
27k
7445
BC848C
9473
7444
BC848C
2404
4u7
3404
1k8
2405
47n
2402
4u7
3402
5k6
3403
22
2403
22u
3406
1n2
3406
33k
3406
10k
TV
7400
TDA2579B/N8S1
6V8
5V6
2V9
4V3
9V
11V5
0V3
0V6
1V1
1V5
2V8
7V5
4V3
31250Hz
100Hz
TV IDENT.
3444
10k
4L03
CVBS/Y
D80
6440
LL4148
6441
LL4148
3426
330
3439
12k
3441
2k4
3442
1k
TP69
TP68
TP70
9459
3483
56k
2V
3484
22k
2401
47u
2409
22n
3415
47k
3414
150k
TV
3413
100
2415
47n
3420
3M9
TP65
+13F
3627
10k
7407
BC848
3422
1M2
3411
150k
2411
150n
5L03
ASP RATIO
F79
3628
100k
3409
360k
4412
4410
2410
150n
3410
100k
TV
3601
100k
3632
100
EHT INFO
2603
56n
3605
*
+13
3437
470
7L03
SC100
D66
7403
BC858C
VERTICAL DRIVE
VE FE
7451
BC858
2455
390p
4400
7450
TDA3654Q
1S03
1L03
3L30
2L30
1L30
21
2407
1n8
3450
4k3
3451
4k3
TP64
TP63
5511
39u
A1
+141
A3
+V START
8L02
C28
+5
A2
-11
A6
+13
2450
10n
2451
1n
2461
RES
2459
68n
6453
RES
6452
BYD33D
+28
2458
22n
2450
100n
28V7
2452
220u
22
TP67
0V4
12V1
6451
BZX79/C3V6
3473
2k
29V
3460
270
Vertical
Vertikal
Verticale
Vertical
3467
10k
3468
330
330
470
7469
BC328
TV
B7
D7

REMARKS/REMARQUES/ANMERKUNGEN/NOTE

| * | 25" | 28" | 33" |
|---|---|---|---|
| 2456 | 470u | 470u | 680u |
| 2504 | 1n | 820p | 470p |
| 3456 | 120k | 120k | 130k |
| 3457 | 8k2 | 8k2 | 9k1 |
| 3466 | 1k5 | 2k7 | 3k3 |
| 3469 | 1k | 2k7 | 2k2 |
| 3538 | 13k | 13k | 12k |
| 3603 | 15k | 18k | 15k |
| 3605 | 10k | 15k | 15k |
| 3626 | 270k | 130k | 270k |

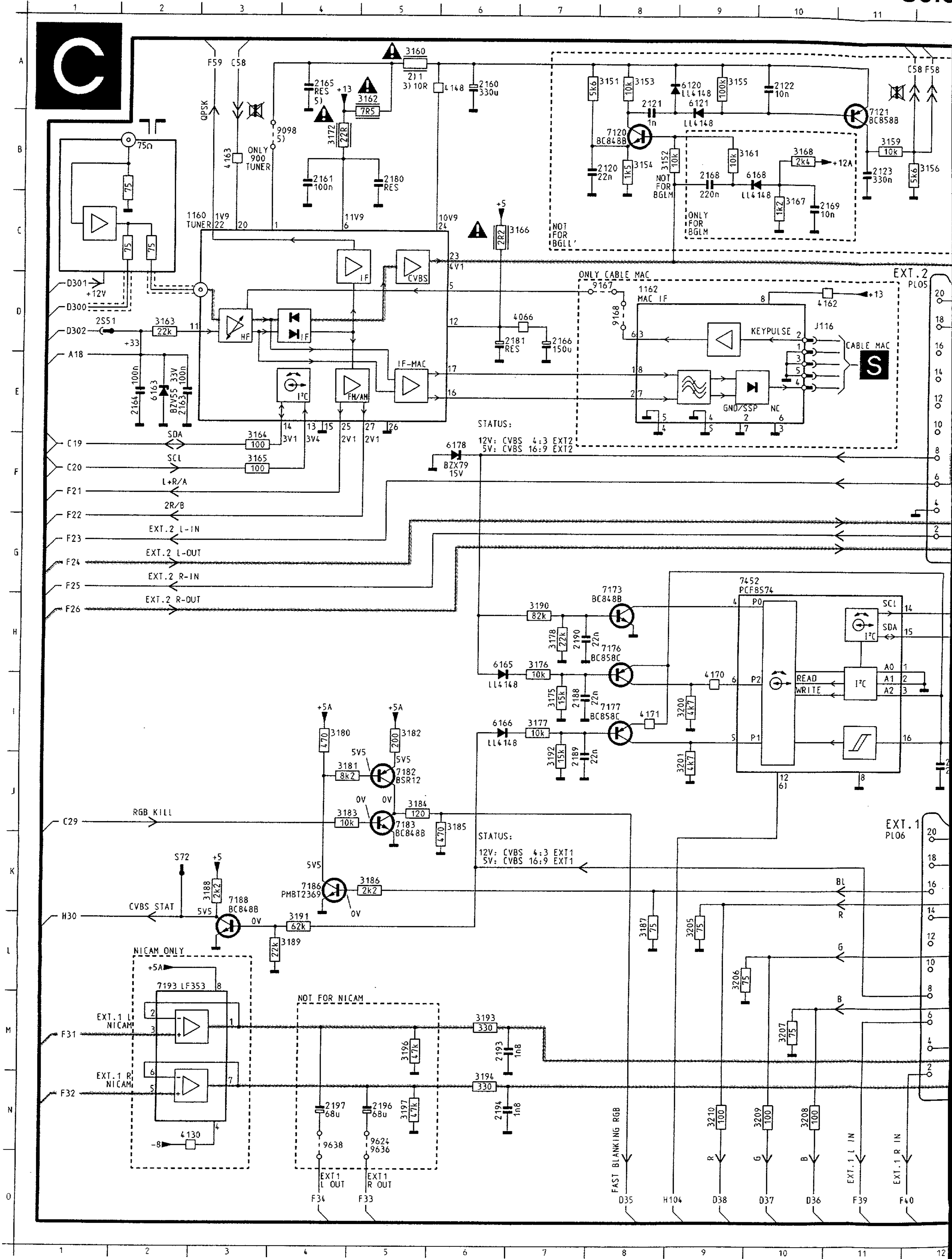
# Synchronisation


NTSC PANEL
4822 212 23892
Horizontal
Orizzontale
Horizontal
Horizontal
East / West
Ost - West
Est / Ovest
Est / Ouest
TV
+V START
+13
+13F
+141
+200
+28
-VN
11V5
0V3
0V6
1V1
1V5
80V
20V
120V
22V
-2V
-15V
0V
5µs/DIV
TP 55
TP68
TP70
TP65
TP54
FLYBACK PULSE
VERTICAL FEEDBACK
DC-SHIFT
LINE COIL
5627
7512 BC548C
7513 BC558C
7504 BU2508AF
7506 BU2508AF
7501 BF819
7402 BC848C
7417
7650 BC548
7651 BC548
7618 BC848C
7603 BC858
7602 BC858
7601 BC848
7608 BC548C
7469 BC328
3513 4k7
3512 330
3514 68
3537 68
5514 15u
6515 LL4148
3515 1
6516 LL4148
3516 1
6517 BYD33D
3517 3
2512 10u
2511 47u
2513 10u
2517 470P
2518 4u7
3509 100k
3418 270
6417 LLZC2V4
3417 2k2
3419 27
3408 33k
3421 1k5
2418 22n
2419 330u
3508 1k5
2503 470p
3502 7k5
3503 7k5
5503
55V
54V
3504 1
6504 BYD33D
3505 47
3506 1
6506 BYD33D
3507 47
3500 1
2502 100n
2501 RES
9508
3407 330
2409 22n
2523 9n1
2404
2524 33n
5524
3524 4R7
6527 BY359F
6526 BY229F-600
9501
1L31
6L31
5L31
4L31
5520 Lin.
3520 1k
3521 1k
2519 1u
6520 BYD33M
2520 470n
3518 30k
3519 30k
6519 BYD33M
2521 560n
5521 U15
9522
3510 330
5510 27u
2510 1n2
3429 1k1
2412 100p
3428 1k1
6404 LL4148
3428 33k
2408 270p
6403 LL4148
2L70
1L70
3650 18K
6650
3651 1K
3653 100K
2653 RES
3652 820
1L71
2L71
1L30
2L30
3456
2456
2457 1u5
3474 RES
3457
3458 1R5
3459 1R5
3461 1
3462 1
3463 1
2458 22n
2450 100n
3464 330
3468 330
3455 470
3467 10k
3470 RES
NIL
071
6629 LL4148
3630 100k
3631 1k8
3629 220k
3626
3465 680
3466
3469
6465 LL4148
6466 LL4148
3602 10k
3603
4508
2601 22n
3618 100k
3607 22k
3606 22k
3608 1k
0V5
3604 160k
2609 120n
3609 47k
3610 4k7
3615 470
2610 2u2
2613 4n7
3617 2k2
3616 3k3
6V5
3V5
6V7
2600 4u7
3619 2k2
3620 6k2
(21)
(22)
(23)
(24)
(25)
(26)
(27)
(29)
(32)
(33)
11
12
13
14
15
16
17
18
19
20
21
22

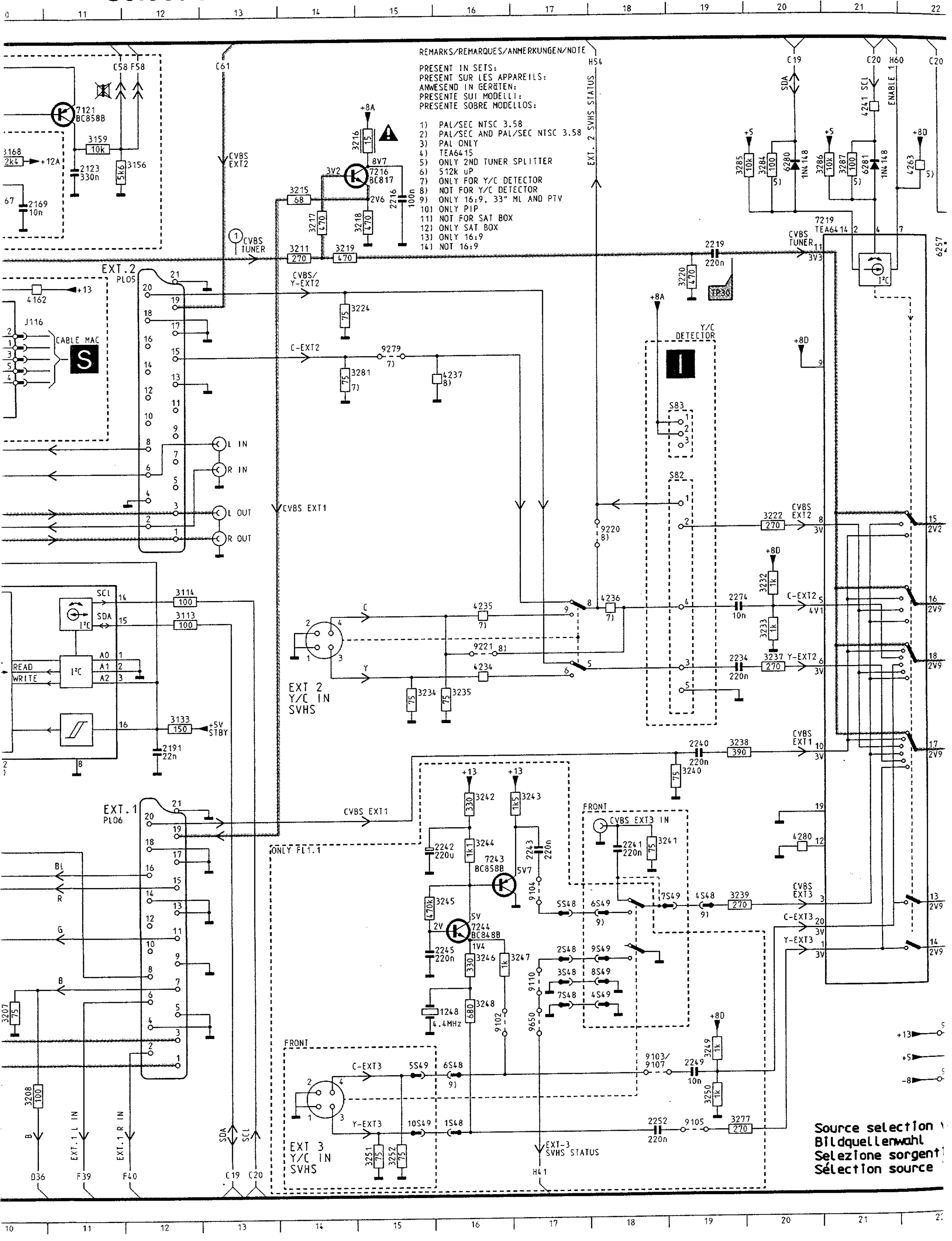

B
22
23
24
25
26
27
28
29
30
5555
(DSBU100)
EHT
E9
E10
E11
VG2
19
TV
+28
3538
2529
470n
3530
470k
2530
22n
7530
BC857
6529
C43
3528
750
3529
100k
2540
RES
3527
1k
7
EHT-INFO
2531
22n
TP 62
0V3
1V
2ms/DIV
TP 63
5V
44V
2ms/DIV
EHT-INFO
BL03
D70
+200
6L13
E12
EHT-INFO
5L13
E13
4L13
E14
+13A
3L13
6280
E15
+13
1N4148
2L13
E16
1L13
-VN
E17
11
3532
150
12
3533
150
IBEAM PROT
3480
100k
VERT.PROT
B7
TP 64
0V
2.3V
2ms/DIV
TP 65
10V
0V
10μs/DIV
3521
1k
6520
BYD33M
3519
30k
6519
BYD33M
+5
6480
BZX79/
C4V3
+13
3485
1k
0V4
0V4
1V5
7480
BC858C
7481
BC848C
3534
2R7
2534
2n2
3536
360
+28
3481
1k
3482
22
2480
10u
0V
3545
130
PROT
A5
SOUND PROT
G8
30
17
3535
2R7
6534
BYD34G
5534
15u
2535
1000u
16
9540
7550
2SD1509
5543
33u
+5
9522
+13
5510
27u
2510
1n2
6536
BY229F
-200
+8
3551
56
3550
470
31
18
9529
2536
470p
2537
2200u
2551
150u
6551
BZX55
-B6V8
TP 68
0.8V
0V1
5μs/DIV
TP 69
3V
0V4
5μs/DIV
1
9
15
5
32
13
2547
5n6
6546
LL4148
7543
BC858
LOT PROT
3
3547
5R1
3548
3k9
2546
100n
3549
120k
33
14
6542
BAV21
-VN
E/W
PROT
TP 70
2V7
0.3V
10μs/DIV
9503
5526
1
2
2605
1n5
9601
28
20
3621
160k
2611
2u2
3611
2k2
18V
+28
+13
2543
10u
3544
39k
3542
100k
17V
7608
BC548C
3614
1k5
17V
7610
2SA1359
0V
13V
7542
BC848C
3608
1k
0V5
3540
30k
7540
BC848C
7541
BC848C
0V2
3623
1
3622
1
2541
33u
3541
470k
-16
2542
1u
3543
1k5
PRS.06959
T-26/113
CHASSIS FL1.1
CL 16532072/011.BREF
301091
A+D+E+
F+G+H
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

| | |
|---|---|
| 2401 | G 6 |
| 2402 | D 6 |
| 2403 | D 8 |
| 2404 | D 6 |
| 2404 | F18 |
| 2405 | D 6 |
| 2407 | L 4 |
| 2408 | H14 |
| 2409 | G11 |
| 2410 | I 7 |
| 2411 | H 8 |
| 2412 | G14 |
| 2415 | G 9 |
| 2416 | D10 |
| 2417 | D10 |
| 2418 | E12 |
| 2419 | E12 |
| 2450 | M11 |
| 2450 | M 5 |
| 2451 | M 5 |
| 2452 | M10 |
| 2455 | K 6 |
| 2456 | L13 |
| 2457 | L12 |
| 2458 | M11 |
| 2459 | L 9 |
| 2461 | L 9 |
| 2480 | G27 |
| 2501 | G14 |
| 2502 | G14 |
| 2503 | E14 |
| 2510 | I22 |
| 2511 | B20 |
| 2512 | A20 |
| 2513 | B20 |
| 2517 | C21 |
| 2518 | D20 |
| 2519 | G21 |
| 2520 | G21 |
| 2521 | H21 |
| 2523 | E18 |
| 2524 | F18 |
| 2529 | C24 |
| 2530 | C25 |
| 2531 | D24 |
| 2534 | G24 |
| 2535 | H25 |
| 2536 | I25 |
| 2537 | J25 |
| 2540 | D25 |
| 2541 | N25 |
| 2542 | N27 |
| 2543 | M25 |
| 2546 | K25 |
| 2547 | K23 |
| 2551 | J26 |
| 2600 | L21 |
| 2601 | N18 |
| 2603 | I 9 |
| 2605 | L23 |
| 2609 | K19 |
| 2610 | L19 |
| 2611 | M24 |
| 2613 | L20 |
| 2653 | K17 |
| 3402 | D 7 |
| 3403 | D 8 |
| 3404 | D 5 |
| 3406 | D 9 |
| 3406 | D 9 |
| 3406 | D 9 |
| 3407 | F13 |
| 3408 | D13 |
| 3409 | H 7 |
| 3410 | I 7 |
| 3411 | H 7 |
| 3413 | G 9 |
| 3414 | G 6 |
| 3415 | G 5 |
| 3417 | C10 |
| 3418 | B11 |
| 3419 | D13 |
| 3420 | H 9 |
| 3421 | D11 |
| 3422 | H 7 |
| 3424 | G 8 |
| 3426 | F 4 |
| 3428 | G12 |
| 3428 | H14 |
| 3429 | G13 |
| 3437 | I 6 |
| 3439 | F 4 |
| 3441 | F 5 |
| 3442 | F 5 |
| 3444 | E 4 |
| 3446 | D 4 |
| 3450 | L 5 |
| 3451 | L 5 |
| 3455 | N12 |
| 3456 | K13 |
| 3457 | L13 |
| 3458 | L13 |
| 3459 | L14 |
| 3460 | N10 |
| 3461 | M13 |
| 3462 | M13 |
| 3463 | M14 |
| 3464 | M12 |
| 3465 | N15 |
| 3466 | N16 |
| 3467 | N10 |
| 3468 | N11 |
| 3469 | N16 |
| 3470 | N12 |
| 3473 | M10 |
| 3474 | L12 |
| 3480 | F28 |
| 3481 | G26 |
| 3482 | G26 |
| 3483 | F 5 |
| 3484 | G 5 |
| 3485 | F27 |
| 3500 | F14 |
| 3502 | F14 |
| 3503 | F14 |
| 3504 | E16 |
| 3505 | E17 |
| 3506 | F16 |
| 3507 | F17 |
| 3508 | E14 |
| 3509 | D16 |
| 3510 | I21 |
| 3512 | A18 |
| 3513 | B17 |
| 3514 | A19 |
| 3515 | A21 |
| 3516 | B21 |
| 3517 | C21 |
| 3518 | G21 |
| 3519 | G21 |
| 3520 | F21 |
| 3521 | F22 |
| 3524 | G19 |
| 3527 | D26 |
| 3528 | D23 |
| 3529 | D24 |
| 3530 | C25 |
| 3532 | E23 |
| 3533 | E23 |
| 3534 | G23 |
| 3535 | H23 |
| 3536 | G25 |
| 3537 | B19 |
| 3538 | C23 |
| 3540 | N24 |
| 3541 | N26 |
| 3542 | M27 |
| 3543 | N27 |
| 3544 | M26 |
| 3545 | G28 |
| 3547 | K24 |
| 3548 | K24 |
| 3549 | K26 |
| 3550 | I26 |
| 3551 | I26 |
| 3601 | H 9 |
| 3602 | N17 |
| 3603 | N18 |
| 3604 | K21 |
| 3605 | I10 |
| 3606 | N21 |
| 3607 | N20 |
| 3608 | N22 |
| 3609 | K19 |
| 3610 | K20 |
| 3611 | M23 |
| 3614 | N23 |
| 3615 | K20 |
| 3616 | L20 |
| 3617 | L20 |
| 3618 | N19 |
| 3619 | M20 |
| 3620 | M21 |
| 3621 | M23 |
| 3622 | N24 |
| 3623 | N24 |
| 3626 | M15 |
| 3627 | H 6 |
| 3628 | H 6 |
| 3629 | M17 |
| 3630 | L15 |
| 3631 | M16 |
| 3632 | H 9 |
| 3650 | I17 |
| 3651 | J16 |
| 3652 | K18 |
| 3653 | K16 |
| 4400 | K 7 |
| 4410 | I 7 |
| 4412 | H 7 |
| 4508 | M18 |
| 5503 | F15 |
| 5510 | I21 |
| 5511 | L 2 |
| 5514 | A19 |
| 5520 | F21 |
| 5521 | H21 |
| 5524 | G18 |
| 5526 | L23 |
| 5534 | H25 |
| 5543 | H26 |
| 5555 | A22 |
| 5627 | E21 |
| 6280 | E28 |
| 6403 | H14 |
| 6404 | G13 |
| 6417 | C11 |
| 6440 | E 4 |
| 6441 | E 4 |
| 6451 | N 9 |
| 6452 | M10 |
| 6453 | L10 |
| 6465 | N16 |
| 6466 | N16 |
| 6480 | F26 |
| 6504 | E16 |
| 6506 | F16 |
| 6515 | A21 |
| 6516 | B21 |
| 6517 | C21 |
| 6519 | G22 |
| 6520 | G22 |
| 6526 | F19 |
| 6527 | E19 |
| 6529 | C24 |
| 6534 | H24 |
| 6536 | I25 |
| 6542 | K23 |
| 6546 | K24 |
| 6551 | J26 |
| 6629 | L15 |
| 6650 | J16 |
| 7400 | E 6 |
| 7402 | G13 |
| 7403 | J 6 |
| 7407 | H 6 |
| 7417 | B10 |
| 7444 | D 5 |
| 7445 | D 4 |
| 7450 | L 6 |
| 7451 | K 5 |
| 7469 | N11 |
| 7480 | G26 |
| 7481 | G27 |
| 7501 | F15 |
| 7504 | E17 |
| 7506 | F17 |
| 7512 | A18 |
| 7513 | B18 |
| 7530 | C25 |
| 7540 | N25 |
| 7541 | N26 |
| 7542 | N26 |
| 7543 | K26 |
| 7550 | H26 |
| 7601 | M19 |
| 7602 | M20 |
| 7603 | L20 |
| 7608 | N22 |
| 7610 | N24 |
| 7618 | L16 |
| 7650 | J16 |
| 7651 | J17 |
| 9459 | F 4 |
| 9473 | D 4 |
| 9501 | D21 |
| 9503 | L23 |
| 9508 | G15 |
| 9522 | H21 |
| 9529 | I23 |
| 9540 | H26 |
| 9601 | M24 |

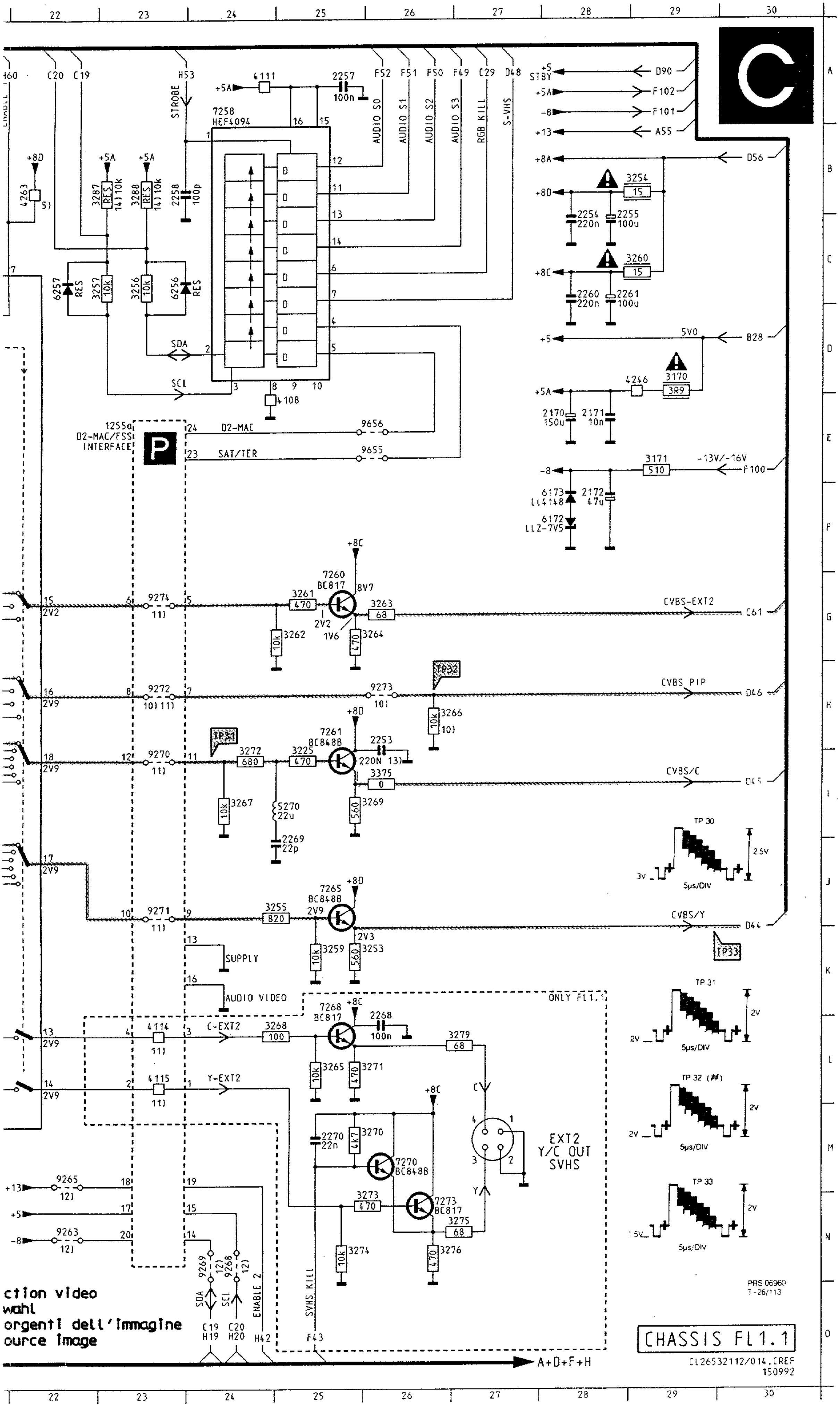
# 6.13 CHASSIS FL1.1 Source selection / Quellenwahl / Séle


C
S
1160 TUNER
75Ω
D301
D300
D302
A18
C19
C20
F21
F22
F23
F24
F25
F26
C29
H30
F31
F32
F59
C58
QPSK
ONLY 900 TUNER
2S51
+12V
+33
+13
+5
+5A
HF
IF
CVBS
IF-MAC
FM/AM
I²C
SDA
SCL
L+R/A
2R/B
EXT.2 L-IN
EXT.2 L-OUT
EXT.2 R-IN
EXT.2 R-OUT
RGB KILL
CVBS STAT
S72
NICAM ONLY
7193 LF353
EXT.1 L NICAM
EXT.1 R NICAM
NOT FOR NICAM
EXT1 L OUT
EXT1 R OUT
F34
F33
FAST BLANKING RGB
D35
H104
D38
D37
D36
F39
F40
R
G
B
EXT.1 L IN
EXT.1 R IN
NOT FOR BGLL'
NOT FOR BGLM
ONLY FOR BGLM
ONLY CABLE MAC
1162 MAC IF
KEYPULSE
J116
CABLE MAC
GND/SSP
NC
EXT.2 PL05
EXT.1 PL06
STATUS:
12V: CVBS 4:3 EXT2
5V: CVBS 16:9 EXT2
12V: CVBS 4:3 EXT1
5V: CVBS 16:9 EXT1
7452 PCF8574
P0
P1
P2
READ
WRITE
A0
A1
A2
7120 BC848B
7121 BC858B
7173 BC848B
7176 BC858C
7177 BC858C
7182 BSR12
7183 BC848B
7186 PMBT2369
7188 BC848B
6178 BZX79 15V
6163 BZV55 33V
6120 LL4148
6121 LL4148
6165 LL4148
6166 LL4148
6168 LL4148
3160
3162 7R5
3163 22k
3164 100
3165 100
3166 2R2
3190 82k
3176 10k
3177 10k
3180 470
3181 8k2
3182 200
3183 10k
3184 120
3185 470
3186 2k2
3188 2k2
3189 22k
3191 62k
3193 330
3194 330
3196 47k
3197 47k
3200 4k7
3201 4k7
3205 75
3206 75
3207 75
3208 100
3209 100
3210 100
3187 75
2160 330u
2166 150u
2193 1n8
2194 1n8
2196 68u
2197 68u
4130
4148
4162
4066
4163
4170
4171
9098
9167
9168
9624
9636
9638
C58 F58
3159 10k
3156 5k6
2123 330n

# Sélection de source


REMARKS/REMARQUES/ANMERKUNGEN/NOTE
PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERÄTEN:
PRESENTE SUI MODELLI:
PRESENTE SOBRE MODELLOS:
1) PAL/SEC NTSC 3.58
2) PAL/SEC AND PAL/SEC NTSC 3.58
3) PAL ONLY
4) TEA6415
5) ONLY 2ND TUNER SPLITTER
6) 512k uP
7) ONLY FOR Y/C DETECTOR
8) NOT FOR Y/C DETECTOR
9) ONLY 16:9, 33" ML AND PTV
10) ONLY PIP
11) NOT FOR SAT BOX
12) ONLY SAT BOX
13) ONLY 16:9
14) NOT 16:9
EXT.2
PL05
EXT.1
PL06
EXT 2 Y/C IN SVHS
EXT 3 Y/C IN SVHS
FRONT
ONLY FL1.1
Y/C DETECTOR
CABLE MAC
S
I
7121 BC858B
7216 BC817
7243 BC858B
7244 BC848B
7219 TEA6414
CVBS TUNER
CVBS EXT2
CVBS EXT1
CVBS EXT3 IN
CVBS/Y-EXT2
C-EXT2
Y-EXT2
C-EXT3
Y-EXT3
EXT. 2 SVHS STATUS
EXT-3 SVHS STATUS
L IN
R IN
L OUT
R OUT
SCL
SDA
READ
WRITE
ENABLE 1
TP30
1248 4.4MHz
D36
F39
F40
C19
C20
H41
H54
H60
C58
F58
C61
EXT.1 L IN
EXT.1 R IN
BL
R
G
B

Source selection
Bildquellenwahl
Selezione sorgent
Sélection source


C
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30
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
C20
C19
H53
STROBE
4111
+5A
2257
100n
7258
HEF4094
F52
F51
F50
F49
C29
D48
AUDIO S0
AUDIO S1
AUDIO S2
AUDIO S3
RGB KILL
S-VHS
+5 STBY
D90
+5A
F102
-8
F101
+13
A55
+8A
D56
+8D
3254
15
2254
220n
2255
100u
+8C
3260
15
2260
220n
2261
100u
+5
5V0
B28
+5A
4246
3170
3R9
2170
150u
2171
10n
-8
3171
510
-13V/-16V
F100
6173
LL4148
2172
47u
6172
LLZ-7V5
4263
3287
RES
3288
2258
100p
6257
3257
10k
3256
6256
SDA
SCL
4108
1255
D2-MAC/FSS INTERFACE
P
D2-MAC
SAT/TER
9656
9655
+8C
7260
BC817
8V7
3261
470
3263
68
2V2
1V6
3262
10k
3264
470
CVBS-EXT2
C61
9274
9272
9273
TP32
CVBS PIP
D46
3266
10k
7261
BC848B
+8D
TP31
9270
3272
680
3225
470
2253
220N
3375
0
CVBS/C
D45
3267
10k
5270
22u
2269
22p
3269
560
TP 30
2.5V
5µs/DIV
+8D
7265
BC848B
9271
3255
820
2V9
2V3
CVBS/Y
D44
3259
10k
3253
560
TP33
SUPPLY
AUDIO VIDEO
ONLY FL1.1
7268
BC817
+8C
2268
100n
4114
C-EXT2
3268
100
3279
68
3265
10k
3271
470
4115
Y-EXT2
+8C
2270
22n
3270
4k7
7270
BC848B
EXT2 Y/C OUT SVHS
3273
470
7273
BC817
3275
68
3274
10k
3276
470
TP 31
2V
TP 32 (#)
TP 33
1.5V
+13
9265
+5
-8
9263
9269
9268
SDA
SCL
ENABLE 2
SVHS KILL
C19 H19
C20 H20
H42
F43
A+D+F+H
PRS 06960 T-26/113
CHASSIS FL1.1
CL26532112/014.CREF 150992

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| | | | | | |
|---|---|---|---|---|---|
| 1160 | C 2 | 3238 | J19 | 9269 | N24 |
| 1162 | D 8 | 3239 | L19 | 9270 | I23 |
| 1248 | M16 | 3240 | J19 | 9271 | J23 |
| 1255 | E23 | 3241 | K18 | 9272 | H23 |
| 2120 | B 7 | 3242 | J16 | 9273 | H26 |
| 2121 | A 8 | 3243 | J17 | 9274 | G23 |
| 2122 | A10 | 3244 | K16 | 9279 | E15 |
| 2123 | B11 | 3245 | L16 | 9624 | N 5 |
| 2160 | A 6 | 3246 | L16 | 9636 | N 5 |
| 2161 | B 4 | 3247 | L16 | 9638 | N 4 |
| 2163 | E 2 | 3248 | M16 | 9650 | M17 |
| 2164 | E 2 | 3249 | N19 | 9655 | E26 |
| 2165 | A 4 | 3250 | N19 | 9656 | E26 |
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| 2170 | E28 | 3254 | B29 | | |
| 2171 | E28 | 3255 | J25 | | |
| 2172 | F28 | 3256 | C23 | | |
| 2180 | B 5 | 3257 | C23 | | |
| 2181 | D 6 | 3259 | K25 | | |
| 2188 | I 7 | 3260 | C29 | | |
| 2189 | J 7 | 3261 | G25 | | |
| 2190 | H 7 | 3262 | G25 | | |
| 2191 | J12 | 3263 | G26 | | |
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| 2194 | N 6 | 3265 | L25 | | |
| 2196 | N 5 | 3266 | H26 | | |
| 2197 | N 4 | 3267 | I24 | | |
| 2216 | C15 | 3268 | L25 | | |
| 2219 | C19 | 3269 | I25 | | |
| 2234 | I19 | 3270 | M25 | | |
| 2240 | J19 | 3271 | L25 | | |
| 2241 | K18 | 3272 | I24 | | |
| 2242 | K15 | 3273 | N26 | | |
| 2243 | K17 | 3274 | N25 | | |
| 2245 | L15 | 3275 | N27 | | |
| 2249 | N19 | 3276 | N26 | | |
| 2252 | O18 | 3277 | O19 | | |
| 2253 | H26 | 3279 | L27 | | |
| 2254 | C28 | 3281 | E14 | | |
| 2255 | C28 | 3284 | B20 | | |
| 2257 | A25 | 3285 | B19 | | |
| 2258 | B23 | 3286 | B21 | | |
| 2260 | C28 | 3287 | B23 | | |
| 2261 | C28 | 3287 | B21 | | |
| 2268 | L26 | 3288 | B23 | | |
| 2269 | J25 | 3375 | I26 | | |
| 2270 | M25 | 4066 | D 7 | | |
| 2274 | H19 | 4108 | E25 | | |
| 3113 | H12 | 4111 | A24 | | |
| 3114 | H12 | 4114 | L23 | | |
| 3133 | I12 | 4115 | L23 | | |
| 3151 | A 7 | 4130 | N 3 | | |
| 3152 | B 8 | 4148 | A 6 | | |
| 3153 | A 8 | 4162 | D10 | | |
| 3154 | B 8 | 4163 | B 3 | | |
| 3155 | A 9 | 4170 | I 9 | | |
| 3156 | B12 | 4171 | I 8 | | |
| 3159 | B11 | 4234 | I16 | | |
| 3160 | A 5 | 4235 | H16 | | |
| 3161 | B 9 | 4236 | H18 | | |
| 3162 | A 5 | 4237 | E16 | | |
| 3163 | D 2 | 4241 | B21 | | |
| 3164 | F 3 | 4246 | D29 | | |
| 3165 | F 3 | 4263 | B22 | | |
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| 3167 | C10 | 5270 | I25 | | |
| 3168 | B10 | 6120 | A 9 | | |
| 3170 | D29 | 6121 | A 9 | | |
| 3171 | E29 | 6163 | E 2 | | |
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| 3175 | I 7 | 6166 | I 6 | | |
| 3176 | H 7 | 6168 | B 9 | | |
| 3177 | I 7 | 6172 | F28 | | |
| 3178 | H 7 | 6173 | F28 | | |
| 3180 | I 4 | 6178 | F 6 | | |
| 3181 | J 4 | 6256 | C23 | | |
| 3182 | I 5 | 6257 | C22 | | |
| 3183 | J 4 | 6280 | B20 | | |
| 3184 | J 5 | 6281 | B21 | | |
| 3185 | J 6 | 7120 | B 8 | | |
| 3186 | K 5 | 7121 | B11 | | |
| 3187 | L 8 | 7173 | G 8 | | |
| 3188 | K 3 | 7176 | H 8 | | |
| 3189 | L 4 | 7177 | I 8 | | |
| 3190 | H 7 | 7182 | J 5 | | |
| 3191 | L 4 | 7183 | J 5 | | |
| 3192 | J 7 | 7186 | K 4 | | |
| 3193 | M 6 | 7188 | K 3 | | |
| 3194 | N 6 | 7193 | L 2 | | |
| 3196 | M 5 | 7216 | B15 | | |
| 3197 | N 5 | 7219 | C20 | | |
| 3200 | I 9 | 7243 | K16 | | |
| 3201 | J 9 | 7244 | L16 | | |
| 3205 | L 9 | 7258 | A24 | | |
| 3206 | L 9 | 7260 | G25 | | |
| 3207 | M10 | 7261 | H25 | | |
| 3208 | N10 | 7265 | J25 | | |
| 3209 | N10 | 7268 | K25 | | |
| 3210 | N 9 | 7270 | M26 | | |
| 3211 | C14 | 7273 | N26 | | |
| 3215 | C14 | 7452 | G 9 | | |
| 3216 | B15 | 9098 | B 3 | | |
| 3217 | C14 | 9102 | M16 | | |
| 3218 | C15 | 9103 | N18 | | |
| 3219 | C14 | 9104 | K17 | | |
| 3220 | D19 | 9105 | O19 | | |
| 3222 | G20 | 9110 | M17 | | |
| 3224 | D14 | 9167 | D 8 | | |
| 3225 | I25 | 9168 | D 8 | | |
| 3232 | H20 | 9220 | G18 | | |
| 3233 | H20 | 9221 | H16 | | |
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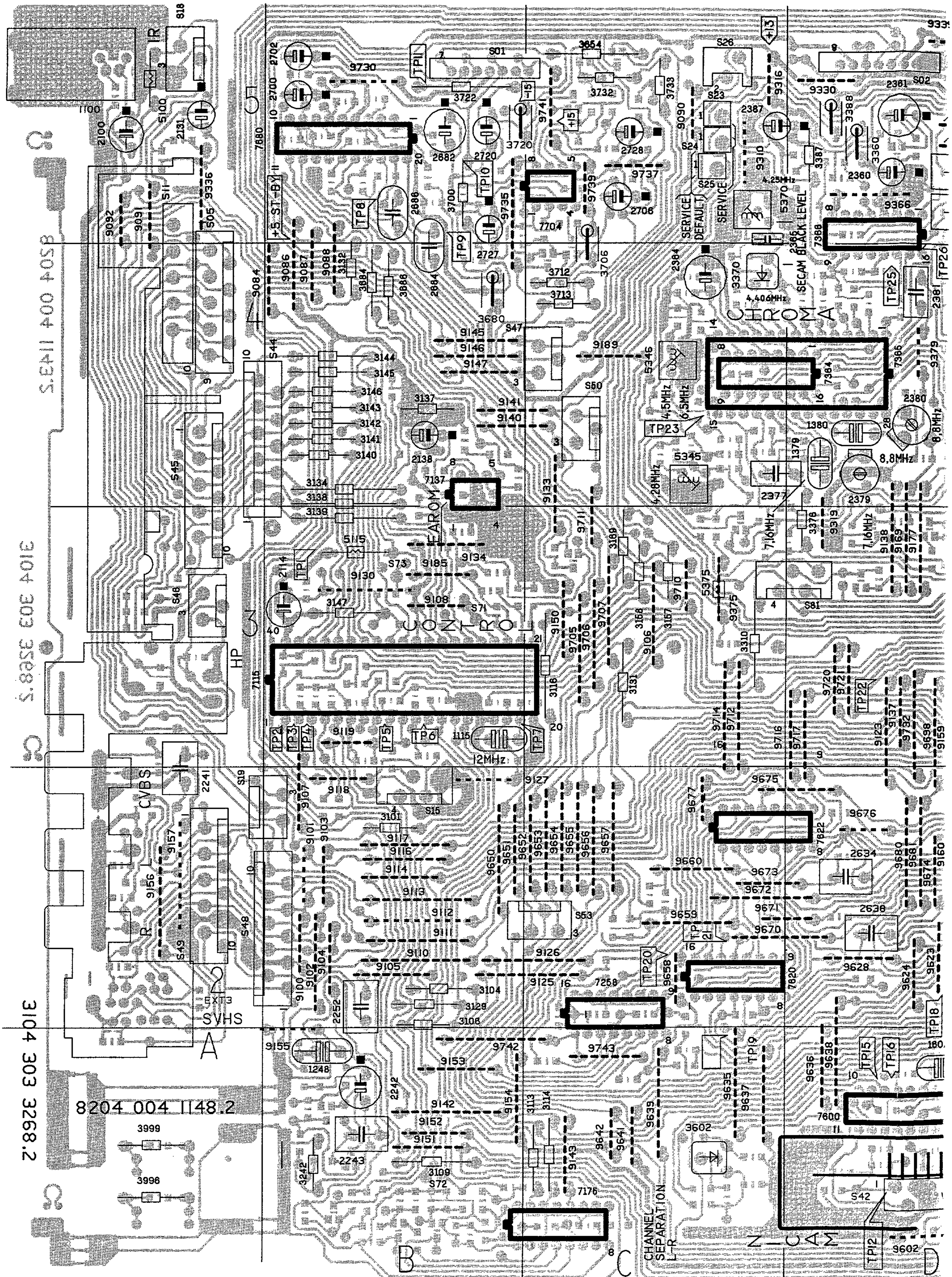
| 3237 | I20 | 9268 | N24 | | |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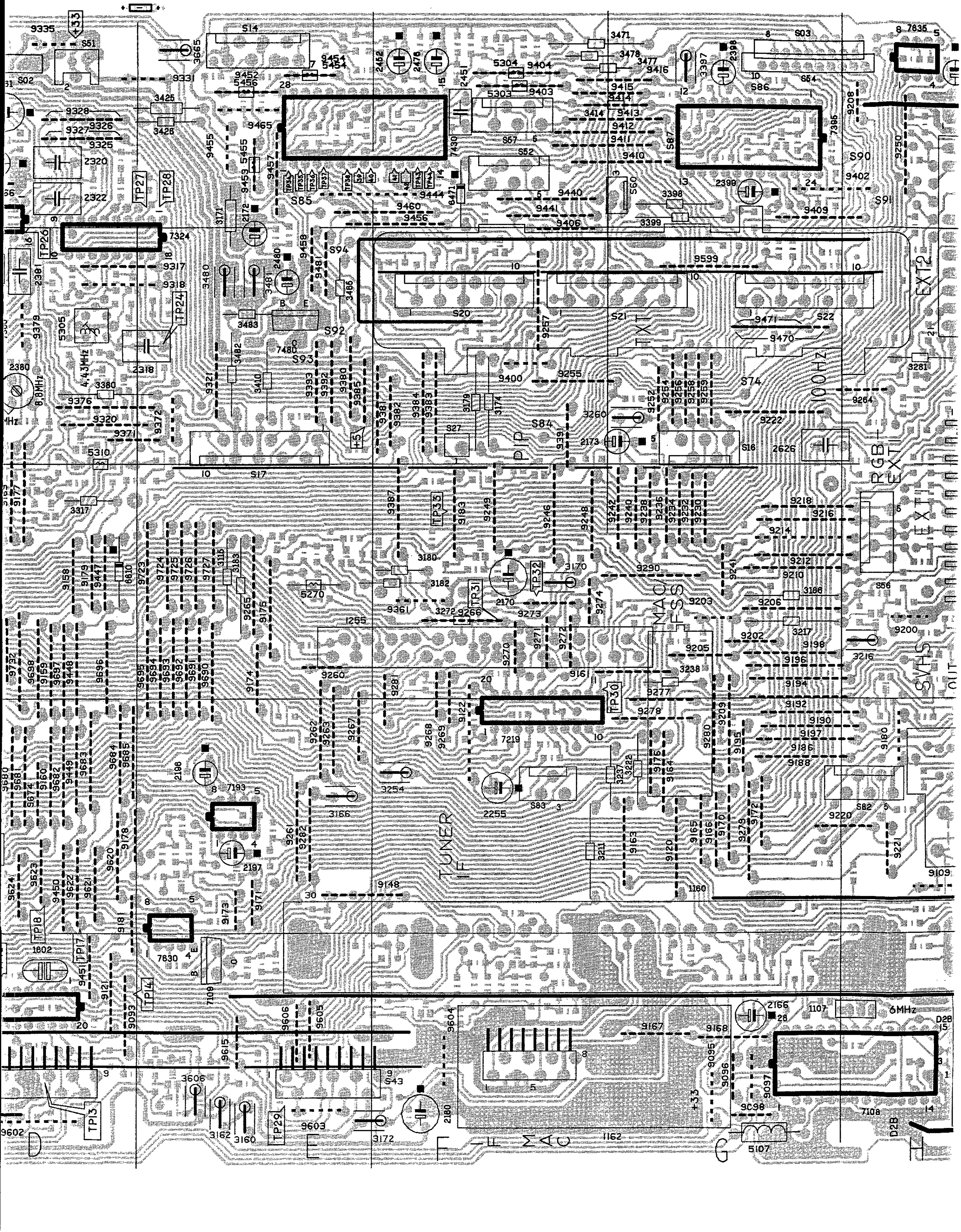
TP10
TP8
TP9
+5 ST-BY
S47
EAROM
TP1
CONTROL
HP
TP2
TP3
TP4
TP5
TP6
12MHz
TP7
CHANNEL SEPARATION L-R
CVBS
EXT3
SVHS
R
L
A
B
C
D
S26
+13
SERVICE DEFAULT
SERVICE
4,25MHz
SECAM BLACK LEVEL
4,406MHz
CHROMA
4,5MHz
6,5MHz
TP23
4,28MHz
8,8MHz
7,16MHz
TP25
TP26
TP22
TP21
TP20
TP18
TP19
TP15
TP16
NICAM
TP12

# Platine à petite signaux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S02
S03
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1107
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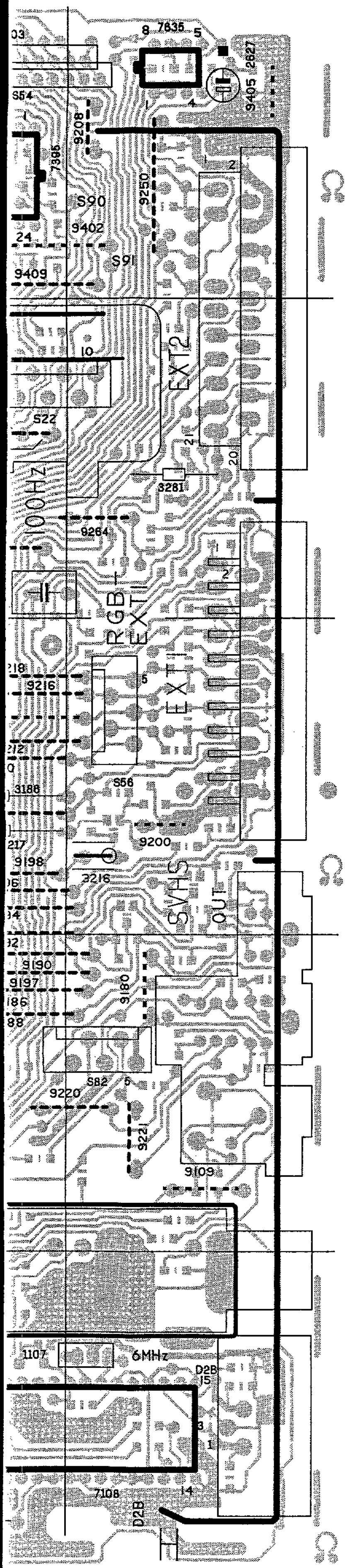
7108
5107
3606
3162
3160
9603
3172
2180
9602
1162
+33
+5
EXT2
EXT1
RGB-EXT
S-VHS OUT
100Hz
TXT
PIP
MAC FSS
TUNER
IF
F
MAC
E
D
G
D2B



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|---|---|
| D2B | H1 |
| EXT1 | H3 |
| EXT2 | H4 |
| EXT3 | A3 |
| S01 | B5 |
| S02 | D5 |
| S03 | H5 |
| S05 | A4 |
| S11 | A5 |
| S14 | E5 |
| S15 | B2 |
| S16 | G4 |
| S17 | E4 |
| S18 | A5 |
| S19 | B2 |
| S20 | F4 |
| S21 | F4 |
| S22 | G4 |
| S23 | C5 |
| S24 | C5 |
| S25 | C5 |
| S26 | C5 |
| S27 | F4 |
| S42 | D1 |
| S43 | F1 |
| S44 | B4 |
| S45 | A4 |
| S46 | A3 |
| S47 | C4 |
| S48 | B2 |
| S49 | A2 |
| S50 | C4 |
| S51 | D5 |
| S52 | F5 |
| S53 | C2 |
| S54 | H5 |
| S56 | H3 |
| S57 | F5 |
| S60 | G5 |
| S81 | D3 |
| S82 | G2 |
| S83 | F2 |
| SVHS | H2 |
| 1100 | A5 |
| 1107 | H1 |
| 1115 | B3 |
| 1160 | E2 |
| 1162 | F1 |
| 1248 | B1 |
| 1379 | D4 |
| 1380 | D4 |
| 1602 | D1 |
| 2100 | A5 |
| 2114 | B3 |
| 2131 | A5 |
| 2138 | B4 |
| 2160 | F1 |
| 2166 | G1 |
| 2170 | F3 |
| 2172 | E4 |
| 2173 | G4 |
| 2196 | E2 |
| 2197 | E2 |
| 2241 | A2 |
| 2242 | B1 |
| 2243 | B1 |
| 2252 | B2 |
| 2256 | F2 |
| 2318 | E4 |
| 2320 | D5 |
| 2322 | D5 |
| 2360 | D5 |
| 2361 | D5 |
| 2364 | C4 |
| 2365 | C5 |
| 2377 | C4 |
| 2379 | D4 |
| 2380 | D4 |
| 2381 | D4 |
| 2387 | C5 |
| 2398 | G5 |
| 2399 | G5 |
| 2451 | F5 |
| 2452 | F5 |
| 2476 | F5 |
| 2480 | E4 |
| 2626 | G4 |
| 2627 | H5 |
| 2634 | D2 |
| 2638 | D2 |
| 2682 | B5 |
| 2684 | B4 |
| 2686 | B5 |
| 2700 | B5 |
| 2702 | B5 |
| 2706 | C5 |
| 2720 | B5 |
| 2727 | B5 |
| 2728 | C5 |
| 3101 | B2 |
| 3104 | B2 |
| 3106 | B2 |
| 3109 | B1 |
| 3113 | C1 |
| 3114 | C1 |
| 3115 | E3 |
| 3116 | C3 |
| 3129 | B2 |
| 3131 | C3 |
| 3132 | B4 |
| 3134 | B4 |
| 3137 | B4 |
| 3138 | B4 |
| 3139 | B3 |
| 3140 | B4 |
| 3141 | B4 |
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| 3144 | B4 |
| 3145 | B4 |
| 3146 | B4 |
| 3147 | B3 |
| 3157 | C3 |
| 3158 | C3 |
| 3160 | E1 |
| 3162 | E1 |
| 3166 | E2 |
| 3169 | C3 |
| 3170 | F3 |
| 3171 | E5 |
| 3172 | E1 |
| 3174 | F4 |
| 3179 | F4 |
| 3180 | F3 |
| 3182 | F3 |
| 3183 | E3 |
| 3186 | G3 |
| 3211 | F2 |
| 3216 | H3 |
| 3217 | G3 |
| 3222 | G2 |
| 3237 | G2 |
| 3238 | G3 |
| 3242 | B1 |
| 3254 | F2 |
| 3260 | G4 |
| 3272 | F3 |
| 3281 | H4 |
| 3310 | C3 |
| 3317 | D3 |
| 3360 | D5 |
| 3370 | C4 |
| 3376 | D3 |
| 3380 | D4 |
| 3387 | D5 |
| 3388 | D5 |
| 3397 | G5 |
| 3398 | G5 |
| 3399 | G5 |
| 3410 | E4 |
| 3414 | G5 |
| 3425 | E5 |
| 3426 | E5 |
| 3465 | E4 |
| 3471 | F5 |
| 3477 | F5 |
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| 3480 | E4 |
| 3481 | E4 |
| 3482 | E4 |
| 3483 | E4 |
| 3602 | C1 |
| 3606 | E1 |
| 3654 | C5 |
| 3665 | E5 |
| 3680 | B4 |
| 3684 | B4 |
| 3686 | B4 |
| 3700 | B5 |
| 3706 | C4 |
| 3712 | C4 |
| 3713 | C4 |
| 3720 | B5 |
| 3722 | B5 |
| 3732 | C5 |
| 3733 | C5 |
| 3996 | A1 |
| 3999 | A1 |
| 5100 | A5 |
| 5107 | G1 |
| 5115 | B3 |
| 5270 | E3 |
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| 5304 | F5 |
| 5305 | D4 |
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| 5345 | C4 |
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| 5375 | C3 |
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| 5456 | E5 |
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| 7115 | B3 |
| 7137 | B3 |
| 7193 | E2 |
| 7219 | F2 |
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| 7366 | D5 |
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| 9090 | C5 |
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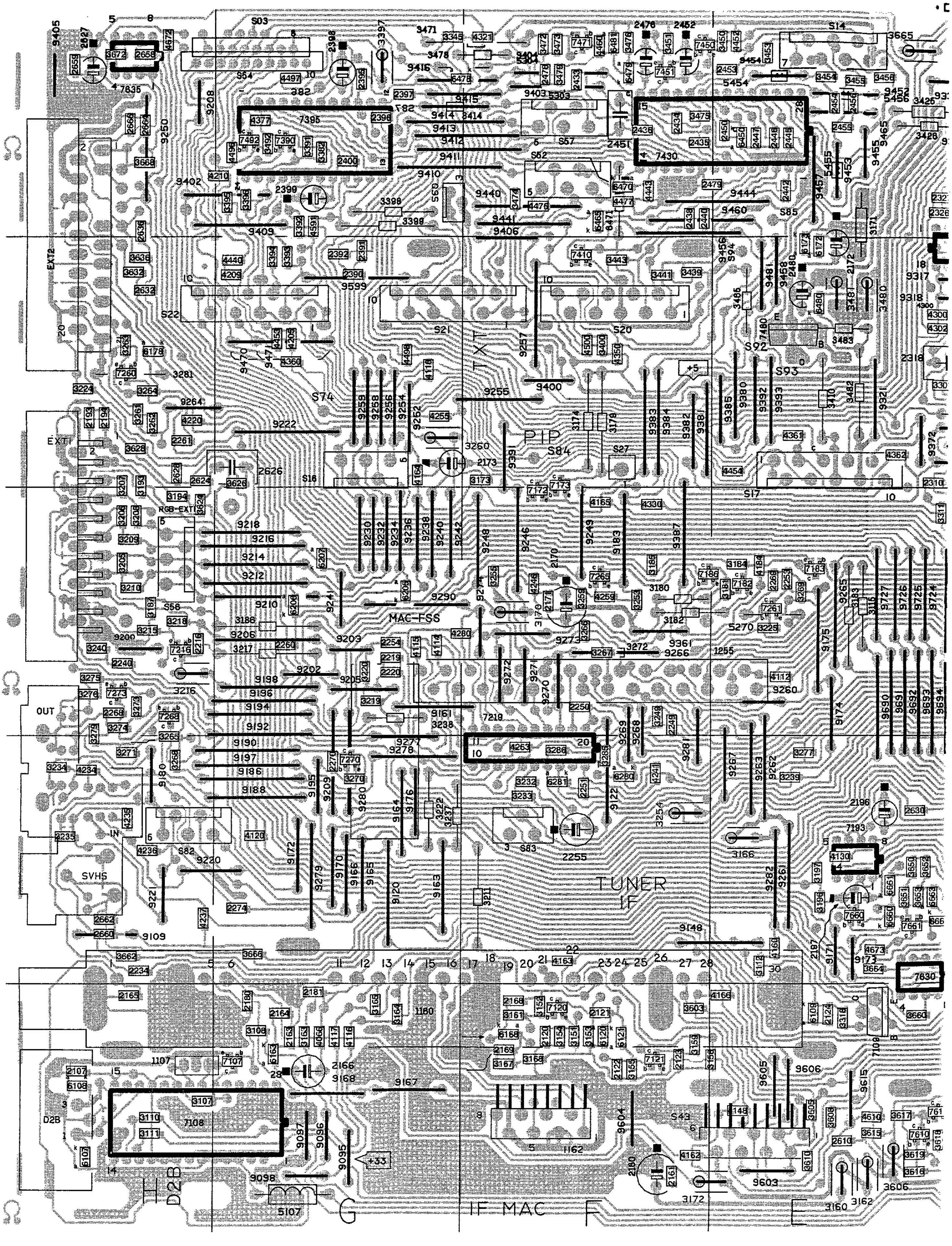
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H
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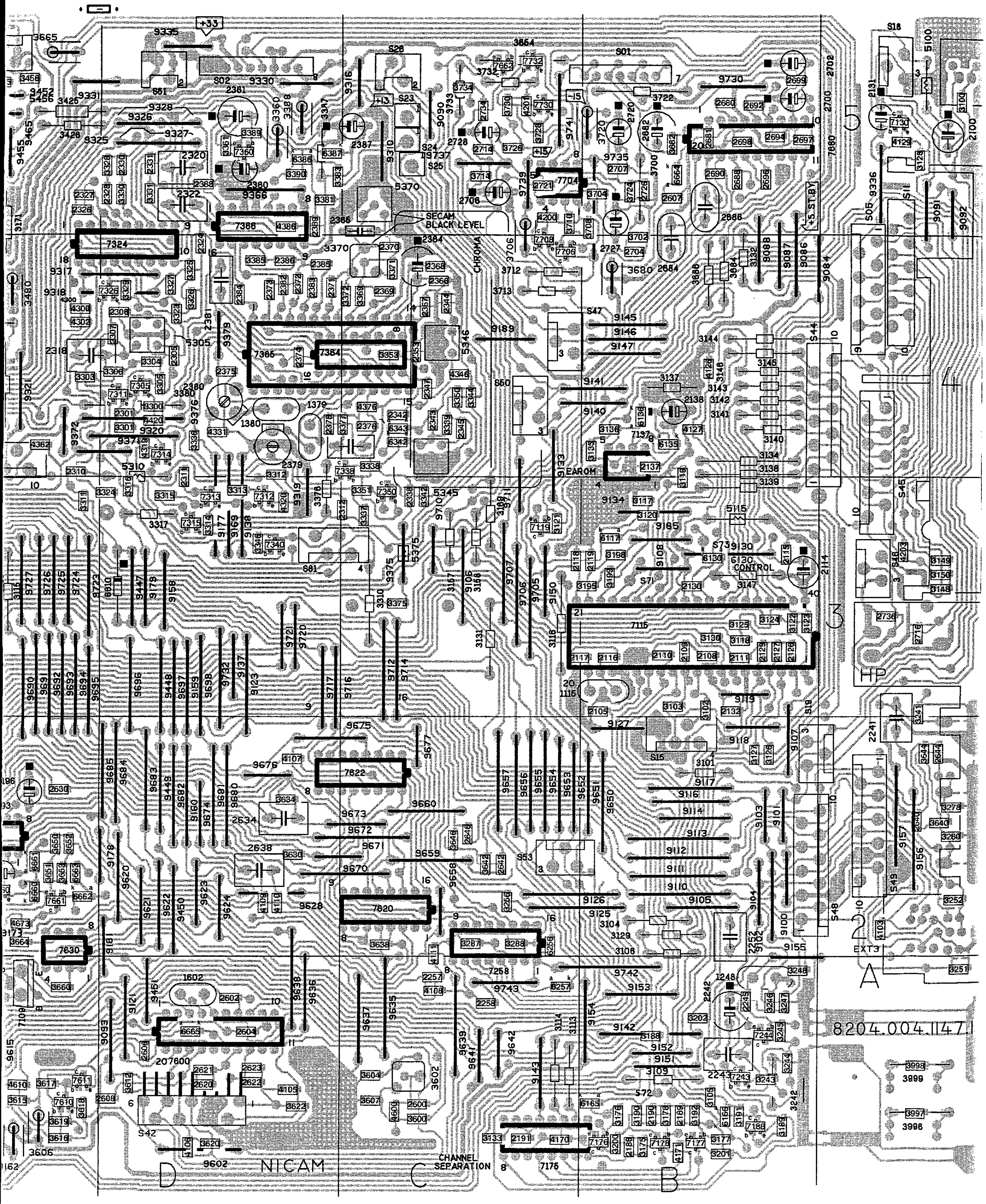
E

# Small signal panel Klein-signal Platine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EAROM
6130 CONTROL
CHANNEL SEPARATION
NICAM
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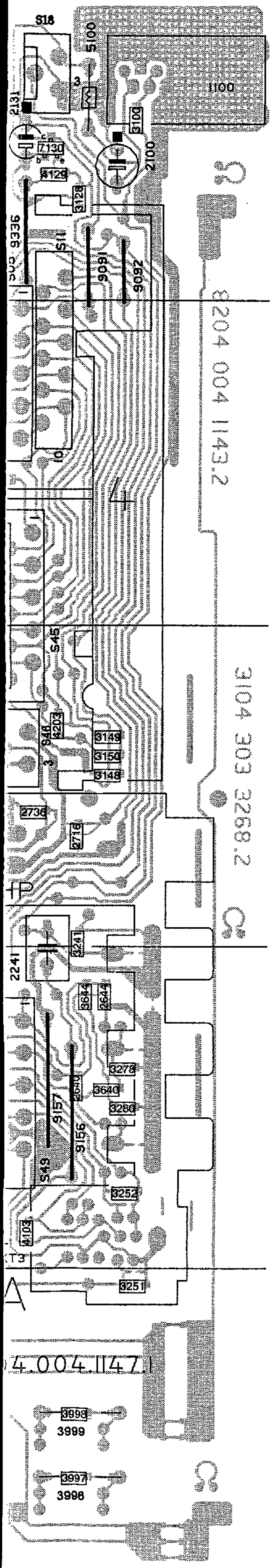
B
C
D
EXT3
HP
+33
+13
+15
-15
+5 ST.BY

# Platine à petite signaux



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S23 C5
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S25 C5
S26 C5
S27 F4
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S46 A3
S47 C4
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9181 D2
9183 F3
9185 B3
9186 G2
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9189 C4
9190 G2
9192 G3
9194 G3
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9220 G2
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9241 G3
9242 G3
9246 F3
9248 F3
9249 F3
9250 H5
9252 G4
9254 G4
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9257 F4
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9259 G4
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9261 E2
9262 E2
9263 E2
9264 H4
9265 E3
9266 F3
9267 E2
9268 F3
9269 F3
9270 F3
9271 F3
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9273 F3
9274 F3
9277 G2
9278 G2
9279 G2
9280 G2
9281 F2
9282 E2
9290 G3
9310 C5
9316 C5
9317 D4
9318 D4
9319 D3
9320 D4
9321 E4
9325 D5
9326 D5
9327 D5
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9330 D5
9331 D5
9335 D5
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9361 F3
9366 D5
9371 D4
9372 E4
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9379 D4
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9449 D2
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9451 D1
9452 E5
9453 E5
9454 E5
9455 E5
9456 F5
9457 E5
9458 E4
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9470 G4
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9599 G4
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9603 E1
9604 F1
9605 E1
9606 E1
9615 E1
9620 D2
9621 D2
9622 D2
9623 D2
9624 D2
9628 D2
9635 C1
9636 D1
9637 C1
9638 D1
9639 C1
9641 C1
9642 C1
9650 B2
9651 B2
9652 C2
9653 C2
9654 C2
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9656 C2
9657 C2
9658 C2
9659 C2
9660 C2
9670 C2
9671 D2
9672 C2
9673 C2
9674 D2
9675 D2
9676 D2
9677 C2
9680 D2
9681 D2
9682 D2
9683 D2
9684 D2
9685 D2
9690 E3
9691 E3
9692 E3
9693 E3
9694 E3
9695 E3
9696 D3
9697 D3
9698 D3
9705 C3
9706 C3
9707 C3
9710 C3
9711 C3
9712 C3
9714 C3
9716 D3
9717 D3
9720 D3
9721 D3
9723 E3
9724 E3
9725 E3
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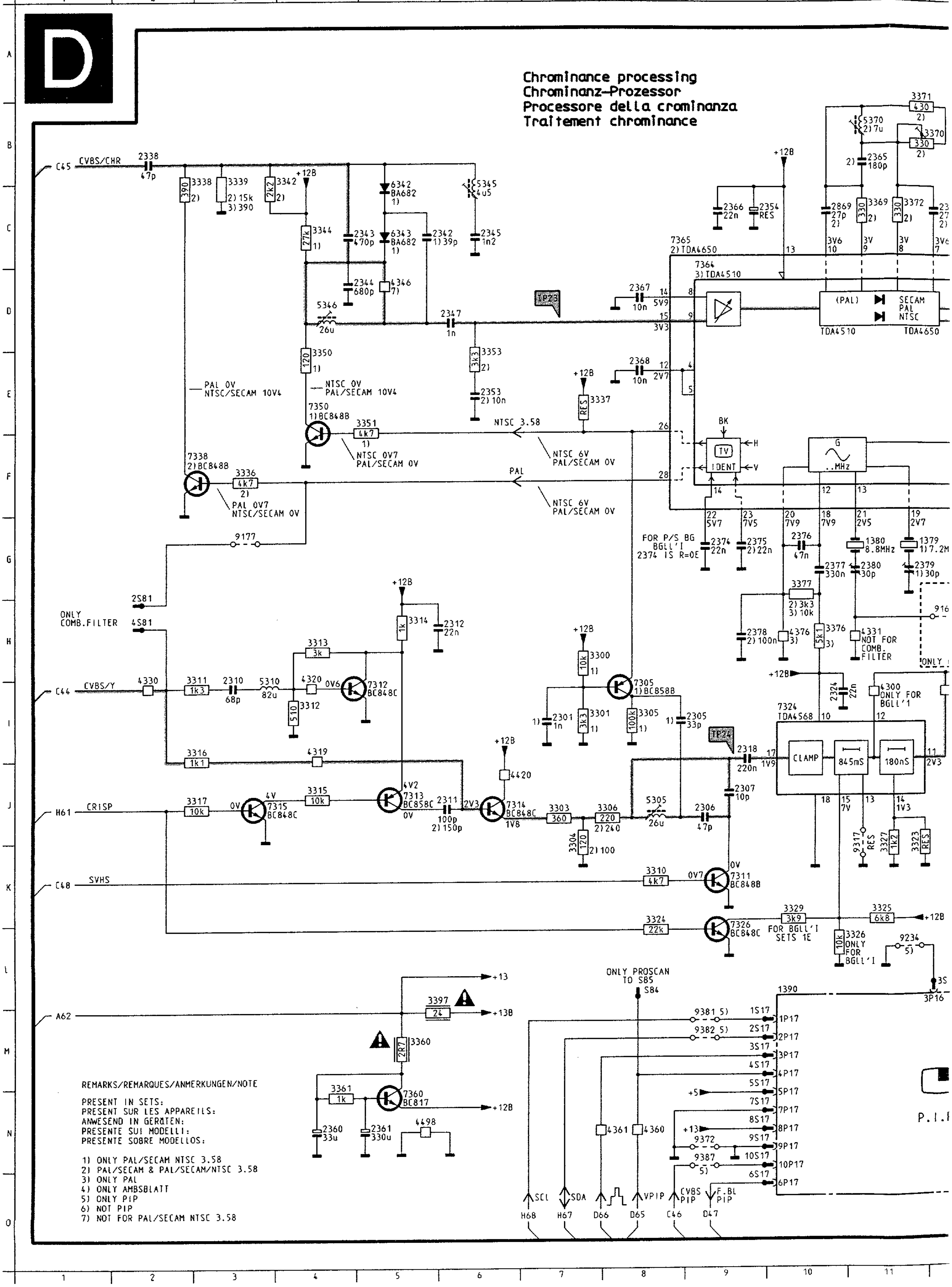
9743 C1

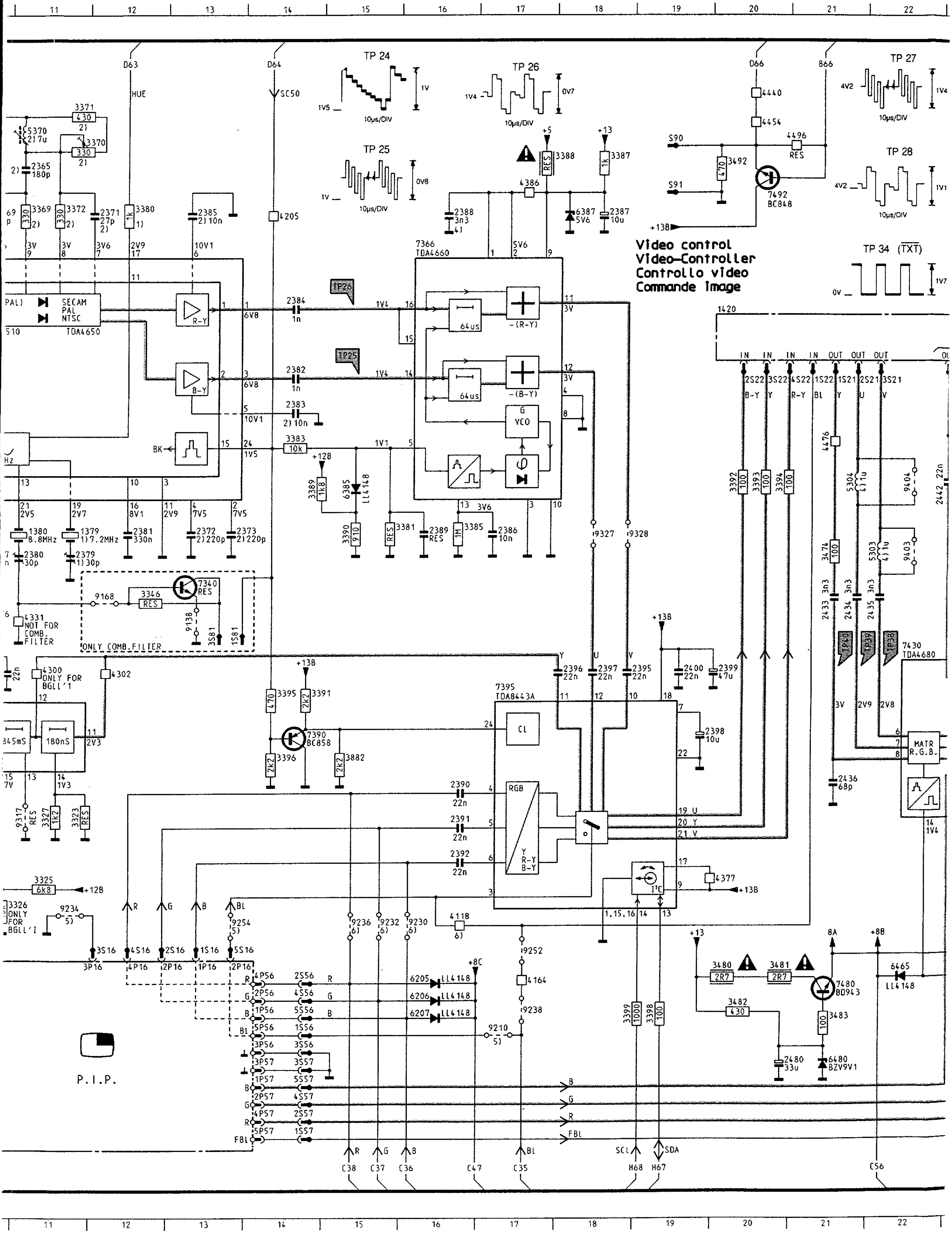

D
Chrominance processing
Chrominanz-Prozessor
Processore della crominanza
Traitement chrominance
C45 CVBS/CHR
C44 CVBS/Y
H61 CRISP
C48 SVHS
A62
ONLY COMB.FILTER
2S81
4S81
7365 2) TDA4650
7364 3) TDA4510
(PAL) SECAM PAL NTSC
TDA4510 TDA4650
TP23
TP24
NTSC 3.58
PAL
PAL 0V NTSC/SECAM 10V4
NTSC 0V PAL/SECAM 10V4
NTSC 0V7 PAL/SECAM 0V
PAL 0V7 NTSC/SECAM 0V
NTSC 6V PAL/SECAM 0V
TV IDENT
BK
..MHz
FOR P/S BG BGLL'I 2374 IS R=0E
1380 8.8MHz
1379 1) 7.2M
7324 TDA4568
CLAMP
845nS
180nS
4300 ONLY FOR BGLL'1
4331 NOT FOR COMB. FILTER
FOR BGLL'I SETS 1E
3326 ONLY FOR BGLL'I
ONLY PROSCAN TO S85
S84
1390
3P16
+12B
+13
+13B
+5
SCL SDA VPIP CVBS PIP F.BL PIP
H68 H67 D66 D65 C46 D47
7338 2) BC848B
7350 1) BC848B
7312 BC848C
7313 BC858C
7315 BC848C
7314 BC848C
7305 1) BC858B
7311 BC848B
7326 BC848C
7360 BC817
P.I.

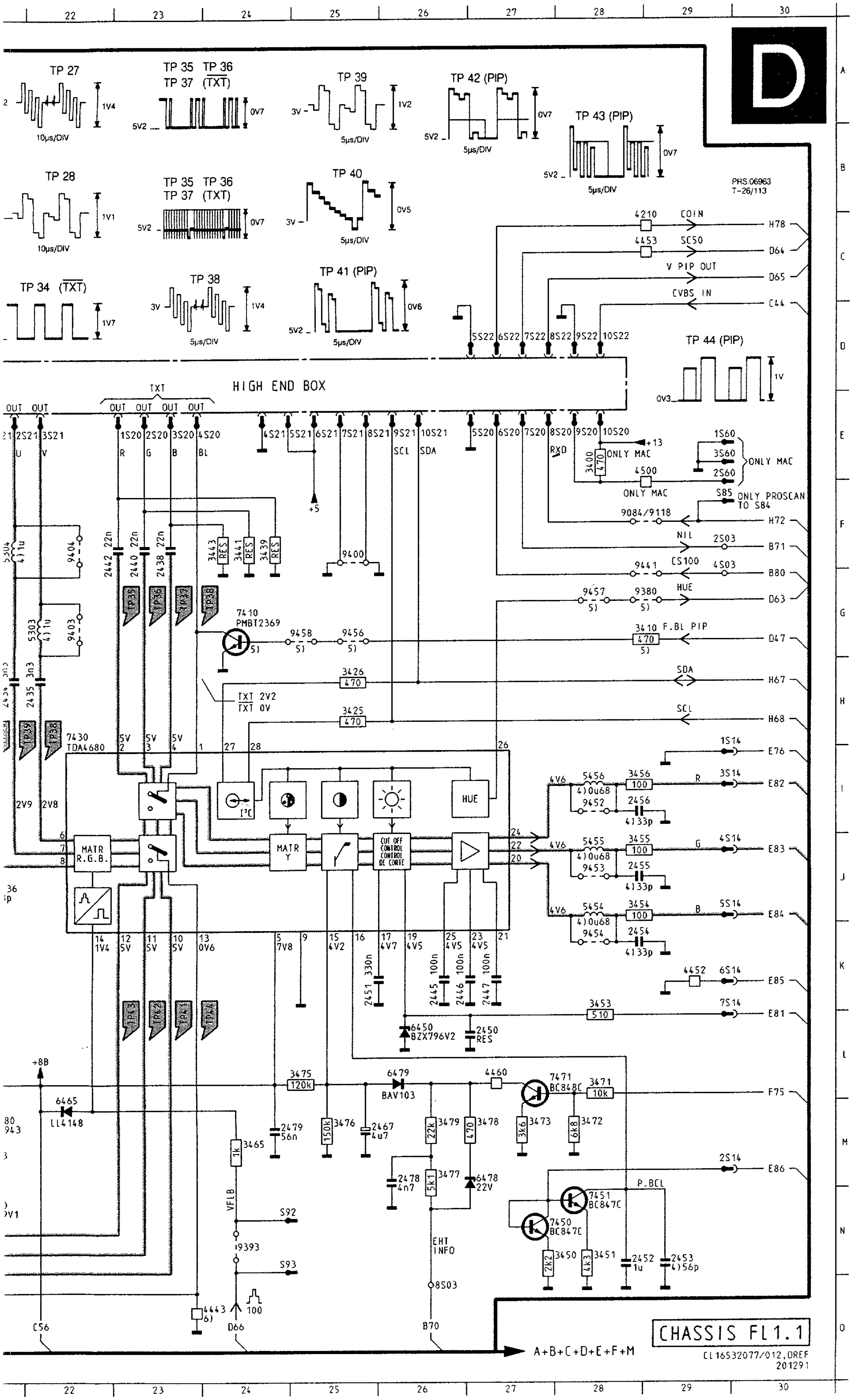
REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERÄTEN:
PRESENTE SUI MODELLI:
PRESENTE SOBRE MODELLOS:

1) ONLY PAL/SECAM NTSC 3.58
2) PAL/SECAM & PAL/SECAM/NTSC 3.58
3) ONLY PAL
4) ONLY AMBSBLATT
5) ONLY PIP
6) NOT PIP
7) NOT FOR PAL/SECAM NTSC 3.58

# Traitement vidéo


Video control
Video-Controller
Controllo video
Commande image
TP 24
TP 25
TP 26
TP 27
TP 28
TP 34 (TXT)
10µs/DIV
7366 TDA4660
7395 TDA8443A
7430 TDA4680
TDA4650
SECAM PAL NTSC
7492 BC848
7390 BC858
7480 BD943
7340 RES
ONLY COMB.FILTER
NOT FOR COMB. FILTER
ONLY FOR BGLL'1
64us
-(R-Y)
-(B-Y)
VCO
MATR R.G.B.
RGB
Y R-Y B-Y
I²C
1420
IN IN IN IN OUT OUT OUT
B-Y Y R-Y BL Y U V
HUE
SC50
D63
D64
D66
866
S90
S91
SCL
SDA
H68
H67
C38
C37
C36
C47
C35
C56
FBL
P.I.P.
11 12 13 14 15 16 17 18 19 20 21 22


D
TP 27
10µs/DIV
1V4
TP 35 TP 36
TP 37 (TXT)
5V2
0V7
TP 39
3V
1V2
5µs/DIV
TP 42 (PIP)
5V2
0V7
5µs/DIV
TP 43 (PIP)
5V2
0V7
5µs/DIV
TP 28
1V1
10µs/DIV
TP 40
3V
0V5
5µs/DIV
PRS.06963
T-26/113
TP 34 (TXT)
1V7
TP 38
3V
1V4
5µs/DIV
TP 41 (PIP)
5V2
0V6
5µs/DIV
TP 44 (PIP)
0V3
1V
4210 COIN
H78
4453 SC50
D64
V PIP OUT
D65
CVBS IN
C44
5S22 6S22 7S22 8S22 9S22 10S22
HIGH END BOX
TXT
OUT OUT OUT OUT OUT OUT
2S21 3S21
U V
1S20 2S20 3S20 4S20
R G B BL
4S21 5S21 6S21 7S21 8S21 9S21 10S21
SCL SDA
5S20 6S20 7S20 8S20 9S20 10S20
RXD
+13
3400 470
ONLY MAC
4500
ONLY MAC
1S60
3S60
2S60
ONLY MAC
S85 ONLY PROSCAN TO S84
9084/9118
H72
NIL 2S03
B71
9441 CS100 4S03
B80
9457 9380 HUE
D63
+5
5304 4)1u
9404
2442 22n
2440 22n
2438 22n
3443 RES
3441 RES
3439 RES
9400
TP35 TP36 TP37 TP38
5303 4)1u
9403
7410 PMBT2369
9458 9456
3410 F.BL PIP 470
D47
3426 470
SDA
H67
TXT 2V2
TXT 0V
3425 470
SCL
H68
2435 3n3
TP39 TP38
7430 TDA4680
5V 5V 5V
2V9 2V8
I²C
HUE
MATR R.G.B.
MATR Y
CUT OFF CONTROL
1S14
E76
4V6 5456 4)0u68 3456 100
9452
2456 4)33p
R 3S14
E82
4V6 5455 4)0u68 3455 100
9453
2455 4)33p
G 4S14
E83
4V6 5454 4)0u68 3454 100
9454
2454 4)33p
B 5S14
E84
14 1V4 12 5V 11 5V 10 5V 13 0V6
5 7V8 9 15 4V2 16 17 4V7 19 4V5 25 4V5 23 4V5 21
2451 330n
2445 100n 2446 100n 2447 100n
4452 6S14
E85
3453 510 7S14
E81
6450 BZX79-C2V2
2450 RES
TP43 TP42 TP41 TP44
+8B
3475 120k
6479 BAV103
4460
7471 BC848C
3471 10k
F75
6465 LL4148
2479 56n
150k 3476
2467 4u7
22k 3479
470 3478
3k6 3473
6k8 3472
1k 3465
2478 4n7
5k1 3477
6478 22V
2S14
E86
P.BCL
7451 BC847C
7450 BC847C
VFLB
S92
9393
S93
EHT INFO
8S03
2k2 3450
4k3 3451
2452 1u
2453 4)56p
4443 6)
100
C56 D66 B70
A+B+C+D+E+F+M
CHASSIS FL1.1
CL 16532077/012, OREF
201291
22 23 24 25 26 27 28 29 30

| | | | | | |
|---|---|---|---|---|---|
| 1379 | G11 | 3381 | G15 | 7480 | M21 |
| 1380 | G11 | 3383 | F14 | 7492 | C20 |
| 1390 | L10 | 3385 | G16 | 9084 | F29 |
| 1420 | D20 | 3387 | B18 | 9138 | H13 |
| 2301 | I 7 | 3388 | B17 | 9168 | H12 |
| 2305 | I 9 | 3389 | F14 | 9177 | G 3 |
| 2306 | J 9 | 3390 | G15 | 9210 | M17 |
| 2307 | J 9 | 3391 | I14 | 9230 | L16 |
| 2310 | I 3 | 3392 | F20 | 9232 | L15 |
| 2311 | J 6 | 3393 | F20 | 9234 | L11 |
| 2312 | H 6 | 3394 | F20 | 9236 | L15 |
| 2318 | I 9 | 3395 | I14 | 9238 | M17 |
| 2324 | I10 | 3396 | J14 | 9252 | L17 |
| 2338 | B 2 | 3397 | L 5 | 9254 | L13 |
| 2342 | C 5 | 3398 | M19 | 9317 | K11 |
| 2343 | C 4 | 3399 | M18 | 9327 | G18 |
| 2344 | D 4 | 3400 | E28 | 9328 | G18 |
| 2345 | C 6 | 3410 | G29 | 9372 | N 9 |
| 2347 | D 6 | 3425 | H25 | 9380 | G29 |
| 2353 | E 6 | 3426 | H25 | 9381 | M 9 |
| 2354 | C 9 | 3439 | F24 | 9382 | M 9 |
| 2360 | N 4 | 3441 | F24 | 9387 | N 9 |
| 2361 | N 5 | 3443 | F24 | 9393 | N24 |
| 2365 | B11 | 3450 | N27 | 9400 | F25 |
| 2366 | C 9 | 3451 | N28 | 9403 | G22 |
| 2367 | D 8 | 3453 | K28 | 9404 | F22 |
| 2368 | E 8 | 3454 | J28 | 9441 | F29 |
| 2371 | C12 | 3455 | J28 | 9452 | I28 |
| 2372 | G13 | 3456 | I28 | 9453 | J28 |
| 2373 | G13 | 3465 | M24 | 9454 | K28 |
| 2374 | G 9 | 3471 | L28 | 9456 | G25 |
| 2375 | G 9 | 3472 | M28 | 9457 | G28 |
| 2376 | G10 | 3473 | M27 | 9458 | G25 |
| 2377 | G10 | 3474 | G21 | | |
| 2378 | H 9 | 3475 | L25 | | |
| 2379 | G11 | 3476 | M25 | | |
| 2380 | G11 | 3477 | M26 | | |
| 2381 | G12 | 3478 | M27 | | |
| 2382 | E14 | 3479 | M26 | | |
| 2383 | E14 | 3480 | L20 | | |
| 2384 | D14 | 3481 | L20 | | |
| 2385 | C13 | 3482 | M20 | | |
| 2386 | G17 | 3483 | M21 | | |
| 2387 | C18 | 3492 | B20 | | |
| 2388 | C16 | 3882 | J15 | | |
| 2389 | G16 | 4118 | L16 | | |
| 2390 | J16 | 4164 | M17 | | |
| 2391 | K16 | 4205 | C14 | | |
| 2392 | K16 | 4210 | C29 | | |
| 2395 | I18 | 4300 | I11 | | |
| 2396 | I18 | 4302 | I12 | | |
| 2397 | I18 | 4319 | I 4 | | |
| 2398 | I19 | 4320 | I 4 | | |
| 2399 | I20 | 4330 | I 2 | | |
| 2400 | I19 | 4331 | H11 | | |
| 2433 | H21 | 4346 | D 5 | | |
| 2434 | H21 | 4360 | N 8 | | |
| 2435 | H22 | 4361 | N 8 | | |
| 2436 | J21 | 4376 | H10 | | |
| 2438 | F23 | 4377 | K20 | | |
| 2440 | F23 | 4386 | B17 | | |
| 2442 | F22 | 4420 | J 6 | | |
| 2445 | K26 | 4440 | A20 | | |
| 2446 | K26 | 4443 | O24 | | |
| 2447 | K27 | 4452 | K29 | | |
| 2450 | L27 | 4453 | C29 | | |
| 2451 | K25 | 4454 | B20 | | |
| 2452 | N28 | 4460 | L27 | | |
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| 2455 | J28 | 4498 | N 5 | | |
| 2456 | I28 | 4500 | E29 | | |
| 2467 | M25 | 5303 | G22 | | |
| 2478 | M26 | 5304 | F21 | | |
| 2479 | M24 | 5305 | J 8 | | |
| 2480 | N20 | 5310 | I 3 | | |
| 2869 | C10 | 5345 | C 6 | | |
| 3300 | H 7 | 5346 | D 4 | | |
| 3301 | I 7 | 5370 | B11 | | |
| 3303 | J 7 | 5454 | J28 | | |
| 3304 | K 7 | 5455 | J28 | | |
| 3305 | I 8 | 5456 | I28 | | |
| 3306 | J 8 | 6205 | M16 | | |
| 3310 | K 8 | 6206 | M16 | | |
| 3311 | I 3 | 6207 | M16 | | |
| 3312 | I 4 | 6342 | C 5 | | |
| 3313 | H 4 | 6343 | C 5 | | |
| 3314 | H 5 | 6385 | F15 | | |
| 3315 | J 4 | 6387 | C18 | | |
| 3316 | I 3 | 6450 | L26 | | |
| 3317 | J 3 | 6465 | M22 | | |
| 3323 | K11 | 6478 | M27 | | |
| 3324 | K 8 | 6479 | L26 | | |
| 3325 | K11 | 6480 | N21 | | |
| 3326 | L10 | 7305 | I 8 | | |
| 3327 | K11 | 7311 | K 9 | | |
| 3329 | K10 | 7312 | I 5 | | |
| 3336 | F 3 | 7313 | J 5 | | |
| 3337 | E 7 | 7314 | J 6 | | |
| 3338 | B 2 | 7315 | J 3 | | |
| 3339 | B 3 | 7324 | I10 | | |
| 3342 | B 3 | 7326 | L 9 | | |
| 3344 | C 4 | 7338 | F 2 | | |
| 3346 | H12 | 7340 | H13 | | |
| 3350 | D 4 | 7350 | E 4 | | |
| 3351 | E 5 | 7360 | N 5 | | |
| 3353 | D 6 | 7364 | D 9 | | |
| 3360 | M 5 | 7365 | C 8 | | |
| 3361 | N 4 | 7366 | C16 | | |
| 3369 | C11 | 7390 | J14 | | |
| 3370 | B11 | 7395 | I17 | | |
| 3371 | B11 | 7410 | G24 | | |
| 3372 | C11 | 7430 | H22 | | |
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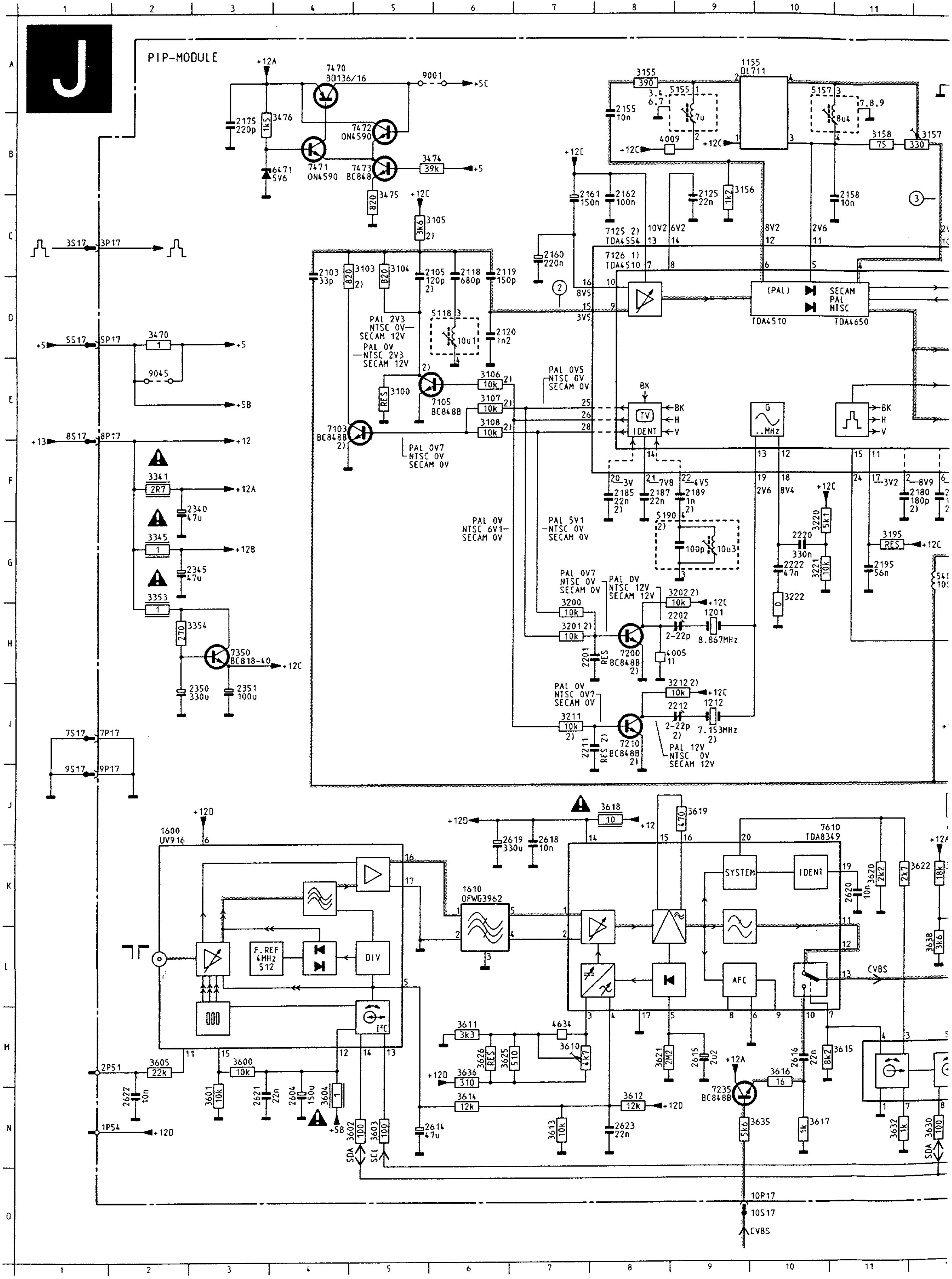
| 3380 | C12 | 7471 | L27 | | |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PIP-MODULE
+12A
7470
BD136/16
9001
+5C
2175
220p
3476
1k5
7472
ON4590
7471
ON4590
7473
BC848
3474
39k
+5
6471
5V6
820
3475
+12C
3105
3k6
3S17
3P17
2103
33p
3103
820
3104
820
2105
120p
2118
680p
2119
150p
5118
10u1
2120
1n2
PAL 2V3
NTSC 0V
SECAM 12V
PAL 0V
NTSC 2V3
SECAM 12V
3100
RES
7105
BC848B
3106
10k
3107
10k
3108
10k
7103
BC848B
PAL 0V7
NTSC 0V
SECAM 0V
5S17
5P17
3470
1
+5
9045
+5B
8S17
8P17
+13
+12
3341
2R7
+12A
2340
47u
3345
1
+12B
2345
47u
3353
1
3354
270
7350
BC818-40
+12C
2350
330u
2351
100u
7S17
7P17
9S17
9P17
1155
DL711
3155
390
5155
7u
2155
10n
4009
+12C
5157
8u4
3158
75
3157
330
2158
10n
2161
150n
2162
100n
2125
22n
3156
1k2
2160
220n
7125 2)
TDA4554
7126 1)
TDA4510
10V2
6V2
8V2
2V6
8V5
3V5
(PAL)
SECAM
PAL
NTSC
TDA4510
TDA4650
PAL 0V5
NTSC 0V
SECAM 0V
BK
TV
IDENT
H
V
G
..MHz
2185
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22n
2189
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3V
7V8
4V5
2V6
8V4
5190
100p
10u3
PAL 0V
NTSC 6V1
SECAM 0V
PAL 5V1
NTSC 0V
SECAM 0V
3220
5k1
2220
330n
2222
47n
3221
10k
3222
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RES
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56n
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180p
8V9
3V2
PAL 0V7
NTSC 0V
SECAM 0V
PAL 0V
NTSC 12V
SECAM 12V
3200
10k
3201
10k
3202
10k
2202
2-22p
1201
8.867MHz
7200
BC848B
2201
RES
4005
3212
10k
2212
2-22p
1212
7.153MHz
3211
10k
2211
RES
7210
BC848B
PAL 0V
NTSC 0V7
SECAM 0V
PAL 12V
NTSC 0V
SECAM 12V
+12D
1600
UV916
F.REF
4MHz
512
DIV
I²C
3618
10
2619
330u
2618
10n
3619
470
7610
TDA8349
1610
OFWG3962
SYSTEM
IDENT
AFC
CVBS
3620
2k2
2620
10n
3622
2k7
18k
3638
3k6
3611
3k3
4634
3610
4k7
3626
RES
3625
510
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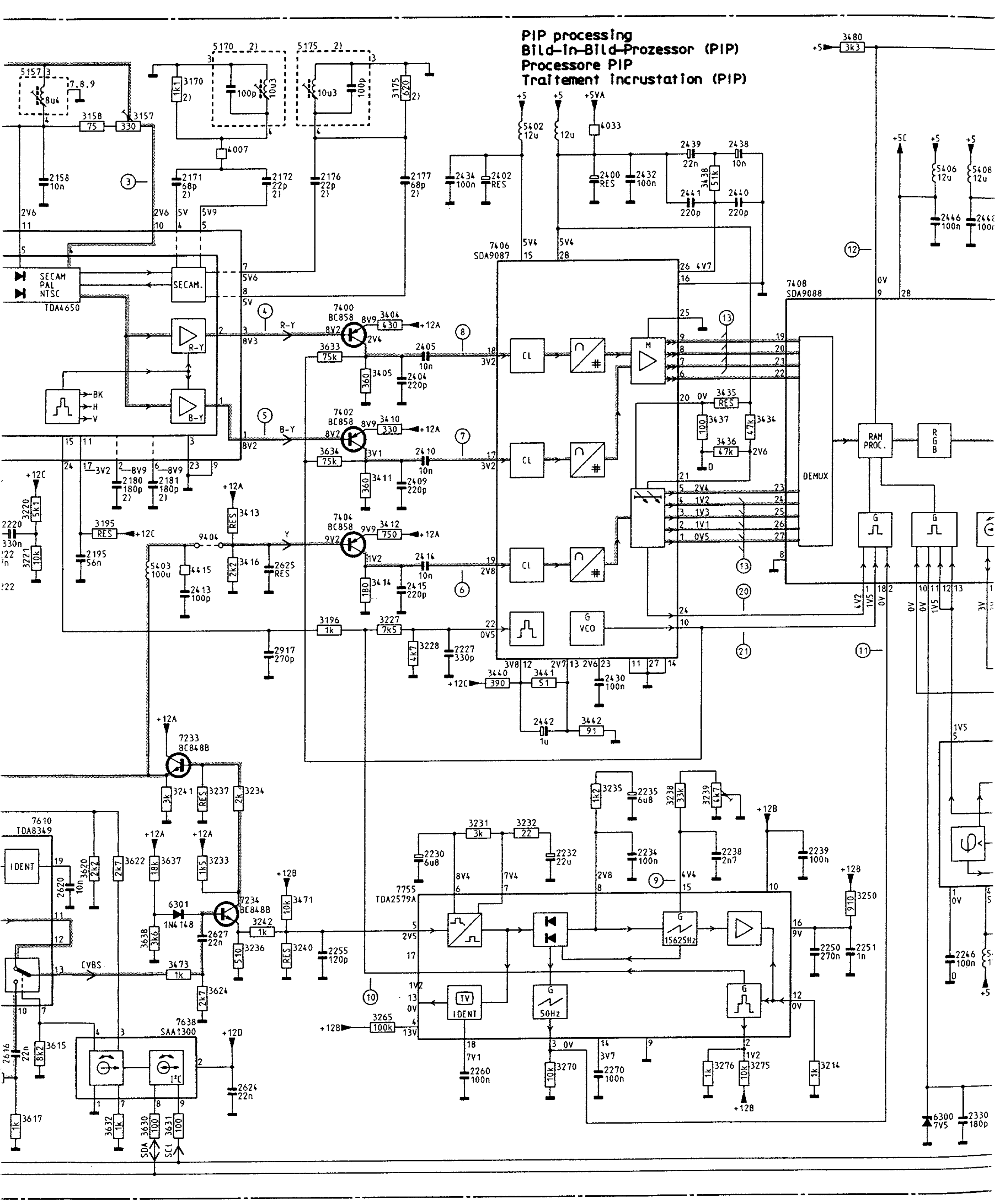
310
3614
12k
3612
12k
3613
10k
2623
22n
3621
2M2
2615
2u2
2616
22n
3615
8k2
3616
16
7235
BC848B
3635
5k6
3617
1k
3632
1k
3630
100
2P51
1P54
3605
22k
2622
10n
3600
10k
3601
10k
2621
22n
2604
150u
3604
1
+5B
3602
100
3603
100
SDA
SCL
2614
47u
10P17
10S17
CVBS

PIP processing
Bild-in-Bild-Prozessor (PIP)
Processore PIP
Traitement incrustation (PIP)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5175 2) 10u3 100p
3158 75
3157 330
3170 1k1
3175 620
4007
2158 10n
2171 68p
2172 22p
2176 22p
2177 68p
SECAM PAL NTSC
TDA4650
SECAM.
R-Y
B-Y
BK H V
7400 BC858
7402 BC858
7404 BC858
3404 430
3410 330
3412 750
3633 75k
3634 75k
3405 360
3411 360
3414 180
2405 10n
2404 220p
2410 10n
2409 220p
2414 10n
2415 220p
3196 1k
3227 7k5
3228 4k7
2227 330p
2917 270p
3195 RES
2195 56n
3220 5k1
3221 10k
2220 330n
3413 RES
3416 2k2
2625 RES
9404
5403 100u
4415
2413 100p
2180 180p
2181 180p
+12A
+12C
7406 SDA9087
5402 12u
4033
+5VA
2434 100n
2402 RES
2400 RES
2432 100n
2439 22n
2438 10n
3438 51k
2441 220p
2440 220p
CL
M
G VCO
3435 RES
3437 100
3434 47k
3436 47k
3440 390
3441 51
2442 1u
3442 91
2430 100n
7408 SDA9088
3480 3k3
DEMUX
RAM PROC.
R G B
5406 12u
5408 12u
2446 100n
7233 BC848B
3241 3k
3237 RES
3234 2k
7234 BC848B
3637 18k
3233 1k5
6301 1N4148
3638 3k6
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7610 TDA8349
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I²C
3615 8k2
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2235 6u8
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3238 33k
3239 4k7
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15625Hz
50Hz
TV IDENT
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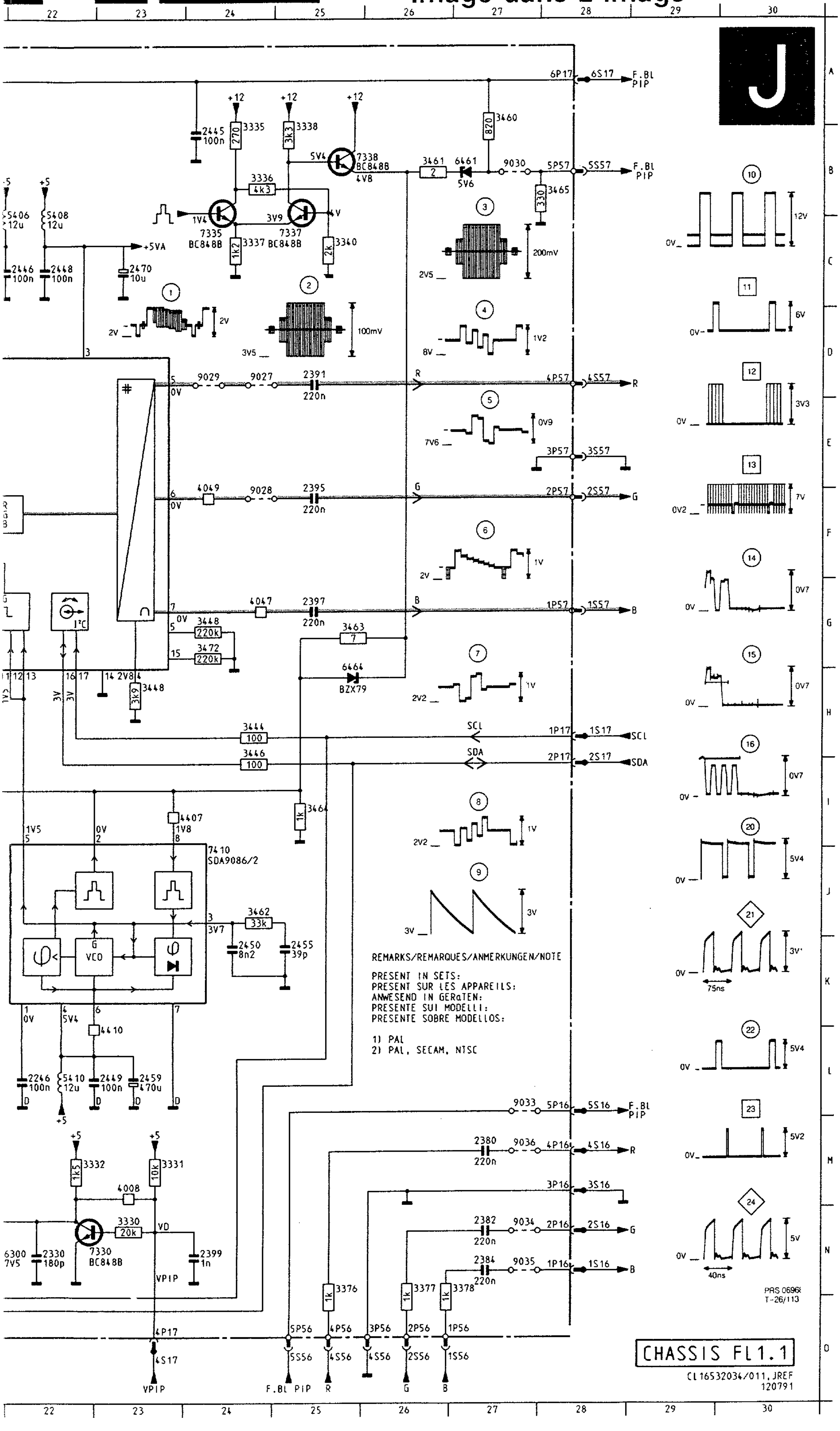
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REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERäTEN:
PRESENTE SUI MODELLI:
PRESENTE SOBRE MODELLOS:

1) PAL
2) PAL, SECAM, NTSC

PRS 0696
T-26/113

CHASSIS FL1.1

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| 3200 | H 7 | 4410 | L23 | | |
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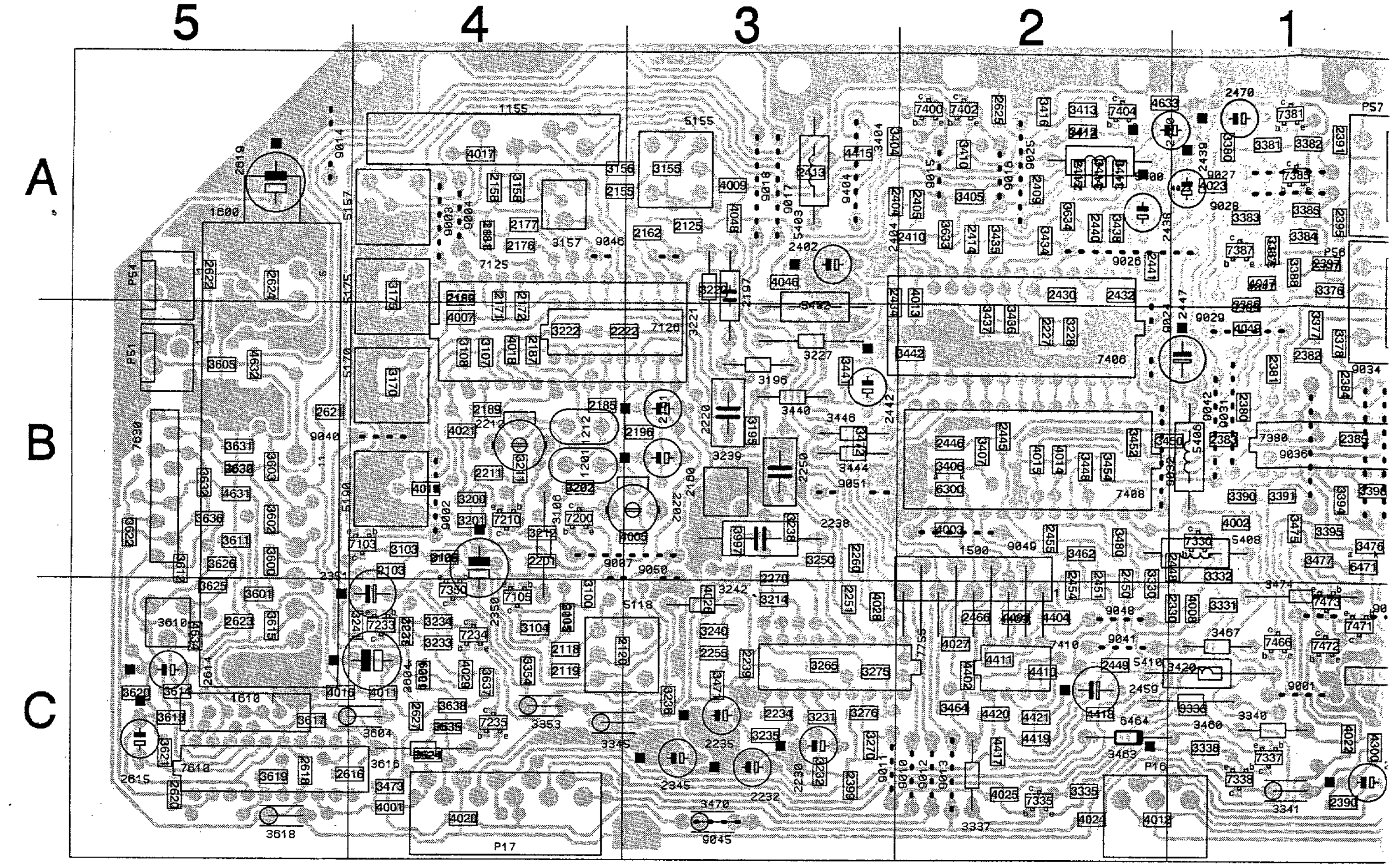
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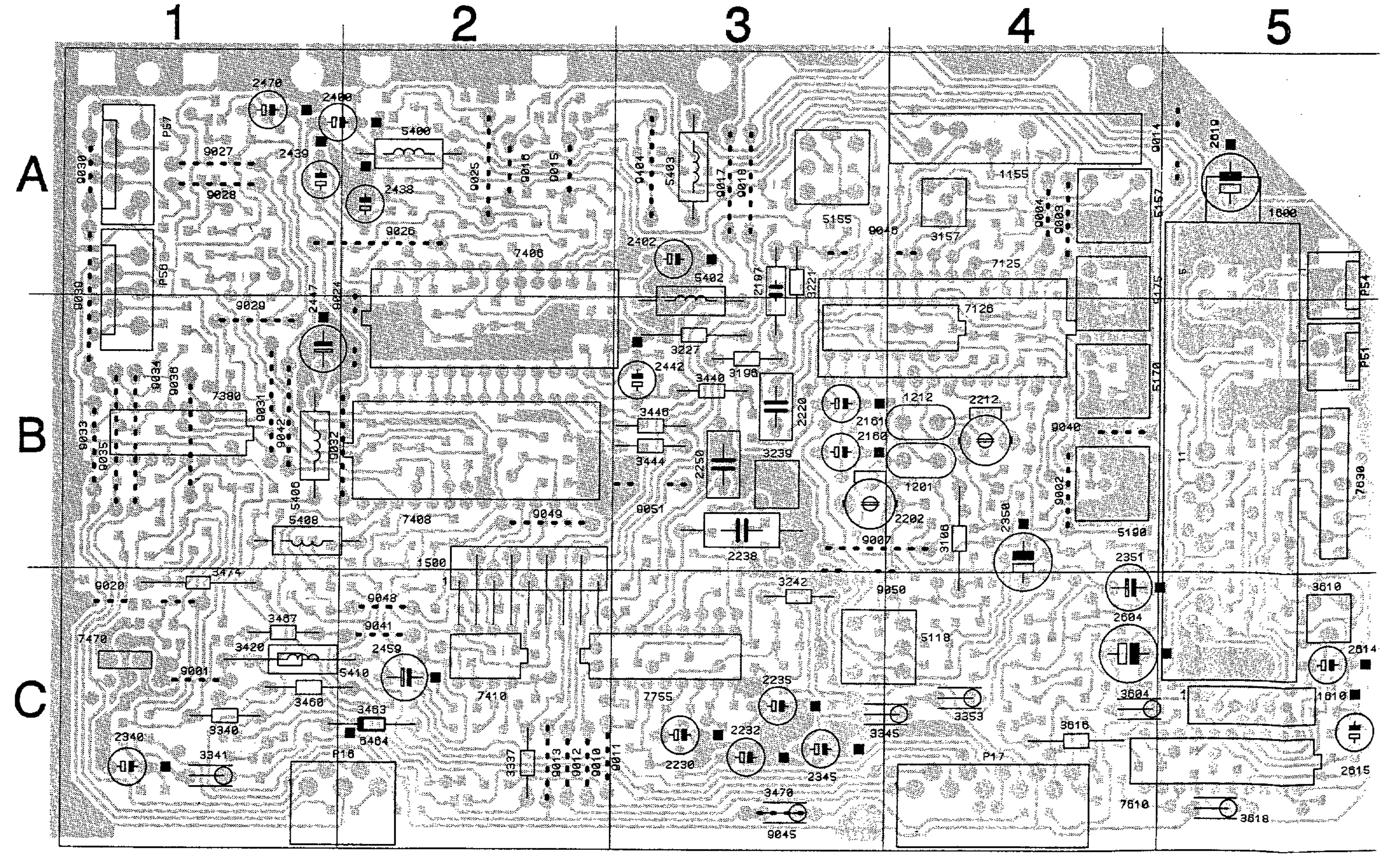
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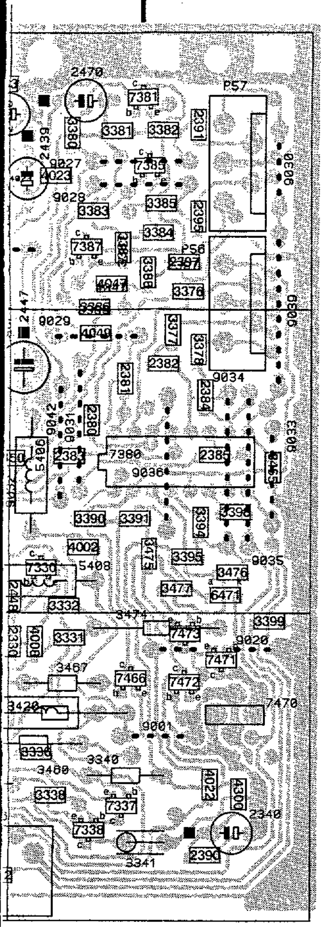
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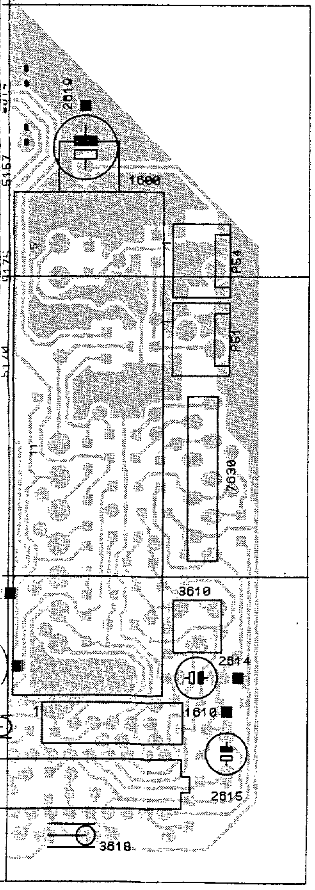
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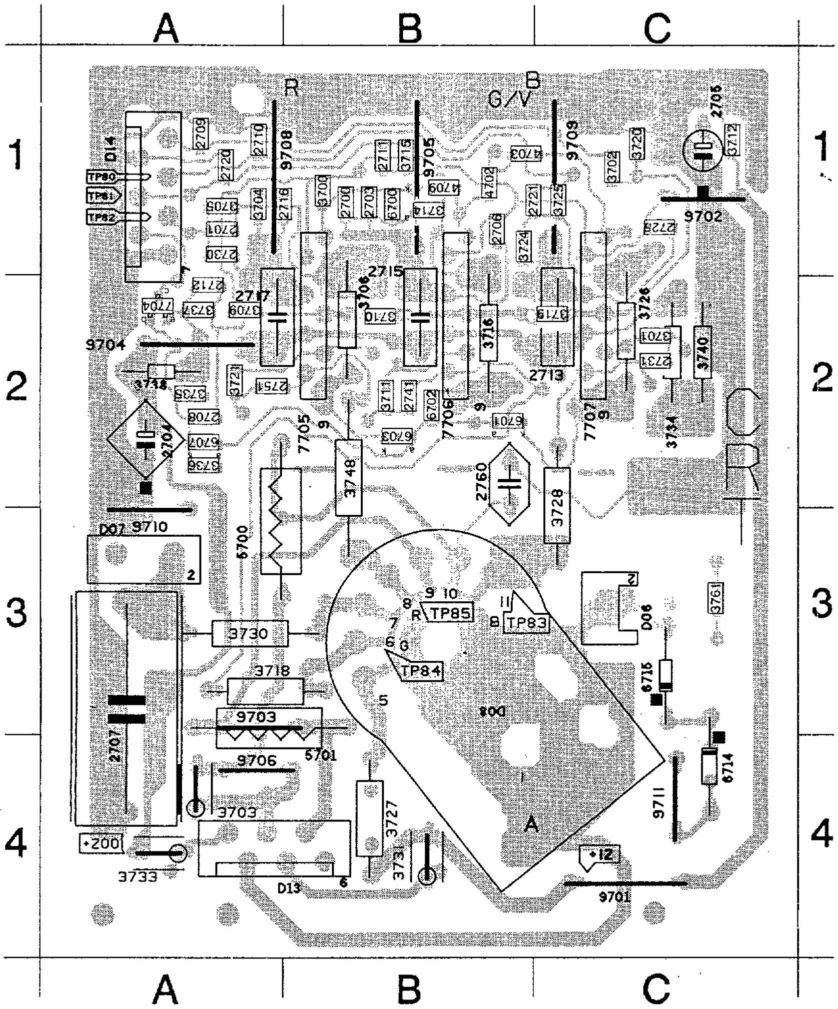
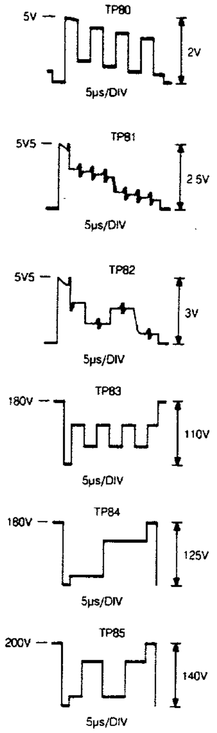
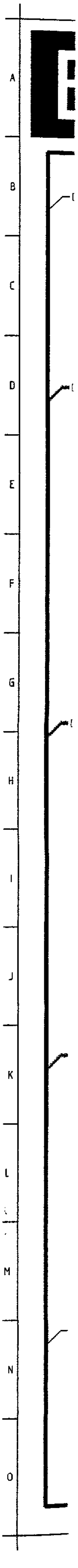
| 7471 | C1 |
| 7472 | C1 |
| 7473 | C1 |
| 7610 | C5 |
| 7630 | B5 |
| 7755 | C3 |
| 9001 | C1 |
| 9002 | B4 |
| 9003 | A4 |
| 9004 | A4 |
| 9007 | B4 |
| 9010 | C2 |
| 9011 | C3 |
| 9012 | C2 |
| 9013 | C2 |
| 9014 | A5 |
| 9015 | A2 |
| 9016 | A2 |
| 9017 | A3 |
| 9018 | A3 |
| 9020 | C1 |
| 9024 | B2 |
| 9025 | A2 |
| 9026 | A2 |
| 9027 | A1 |
| 9028 | A1 |
| 9029 | B1 |
| 9030 | A1 |
| 9031 | B1 |
| 9032 | B2 |
| 9033 | B1 |
| 9034 | B1 |
| 9035 | B1 |
| 9036 | B1 |
| 9039 | A1 |
| 9040 | B4 |
| 9041 | C2 |
| 9042 | B1 |
| 9046 | A4 |
| 9048 | C2 |
| 9049 | B2 |
| 9050 | B3 |
| 9051 | B3 |
| 9404 | A3 |

# Picture tube panel / Bildröhren Platte /

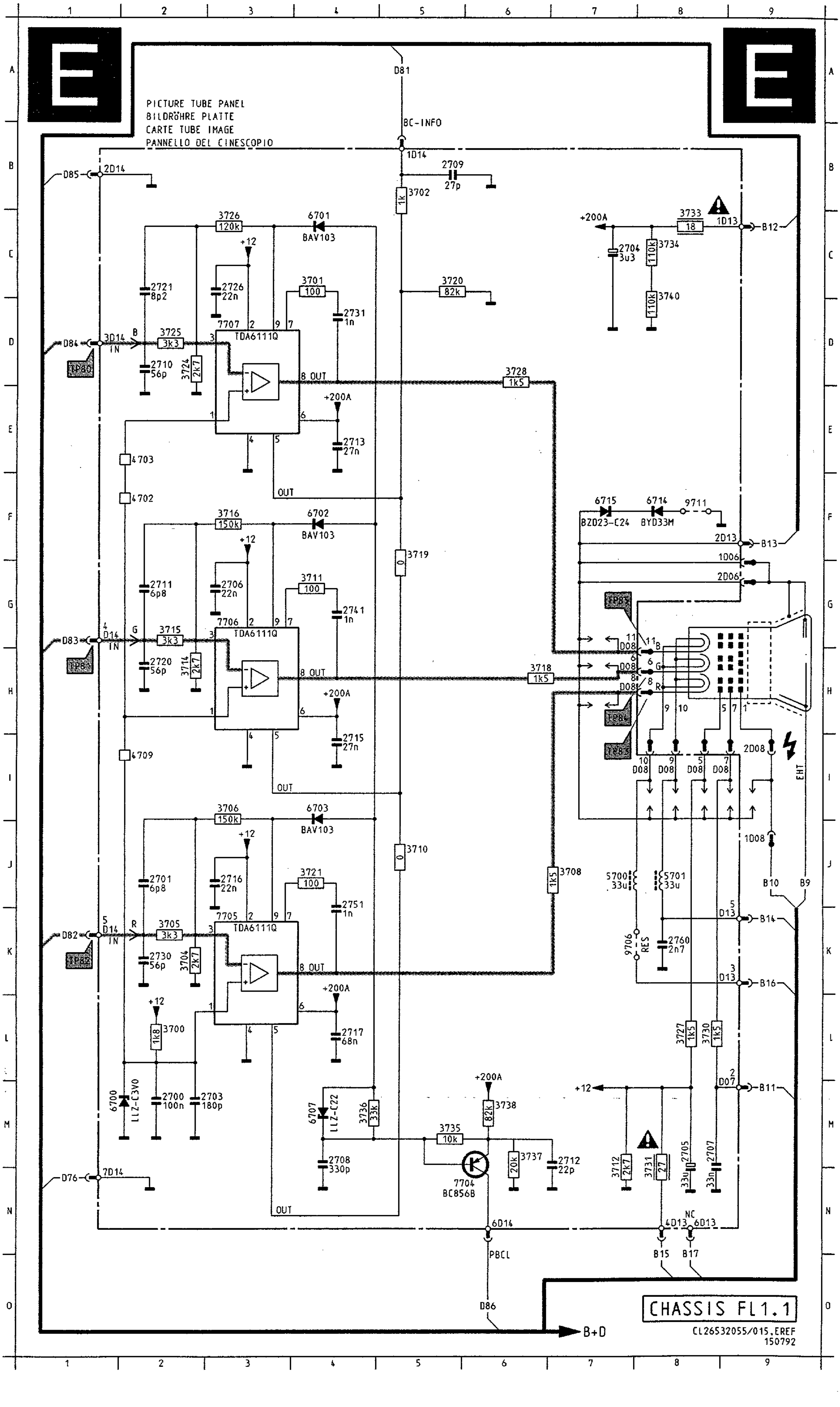

A
B
C
1
2
3
4
R
G/V
B
D14
TP80
TP81
TP82
9708
9705
9709
9702
9704
9710
D07
2705
2715
2717
2713
2760
3706
3716
3726
3740
3748
3728
3734
7705
7706
7707
5700
3730
3718
9703
5701
9706
2707
3703
+200
3733
D13
3727
3731
D08
TP85
TP83
TP84
D06
3761
6715
6714
9711
+12
9701



| | | | | | |
|---|---|---|---|---|---|
| D06 | C3 | 3702 | C1 | 3748 | B2 |
| D07 | A3 | 3703 | A4 | 3761 | C3 |
| D08 | B3 | 3704 | A1 | 4702 | B1 |
| D13 | A4 | 3705 | A1 | 4703 | B1 |
| D14 | A1 | 3706 | B2 | 4709 | B1 |
| 2700 | B1 | 3709 | A2 | 5700 | A3 |
| 2701 | A1 | 3710 | B2 | 5701 | A3 |
| 2703 | B1 | 3711 | B2 | 6700 | B1 |
| 2704 | A2 | 3712 | C1 | 6701 | B2 |
| 2705 | C1 | 3714 | B1 | 6702 | B2 |
| 2706 | B1 | 3715 | B1 | 6703 | B2 |
| 2707 | A3 | 3716 | B2 | 6707 | A2 |
| 2708 | A2 | 3718 | A3 | 6714 | C3 |
| 2710 | A1 | 3719 | C2 | 6715 | C3 |
| 2711 | B1 | 3720 | C1 | 7704 | A2 |
| 2712 | A2 | 3721 | A2 | 7705 | B1 |
| 2713 | C2 | 3724 | B1 | 7706 | B1 |
| 2715 | B2 | 3725 | C1 | 7707 | C1 |
| 2716 | A1 | 3726 | C2 | 9701 | C4 |
| 2717 | A2 | 3727 | B4 | 9702 | C1 |
| 2720 | A1 | 3728 | C2 | 9703 | A3 |
| 2721 | B1 | 3730 | A3 | 9704 | A2 |
| 2726 | C1 | 3731 | B4 | 9705 | B1 |
| 2730 | A1 | 3733 | A4 | 9706 | A4 |
| 2731 | C2 | 3734 | C2 | 9708 | A1 |
| 2741 | B2 | 3735 | A2 | 9709 | C1 |
| 2751 | A2 | 3736 | A2 | 9710 | A2 |
| 2760 | B2 | 3737 | A2 | 9711 | C3 |
| 3700 | B1 | 3738 | A2 | | |
| 3701 | C2 | 3740 | C2 | | |

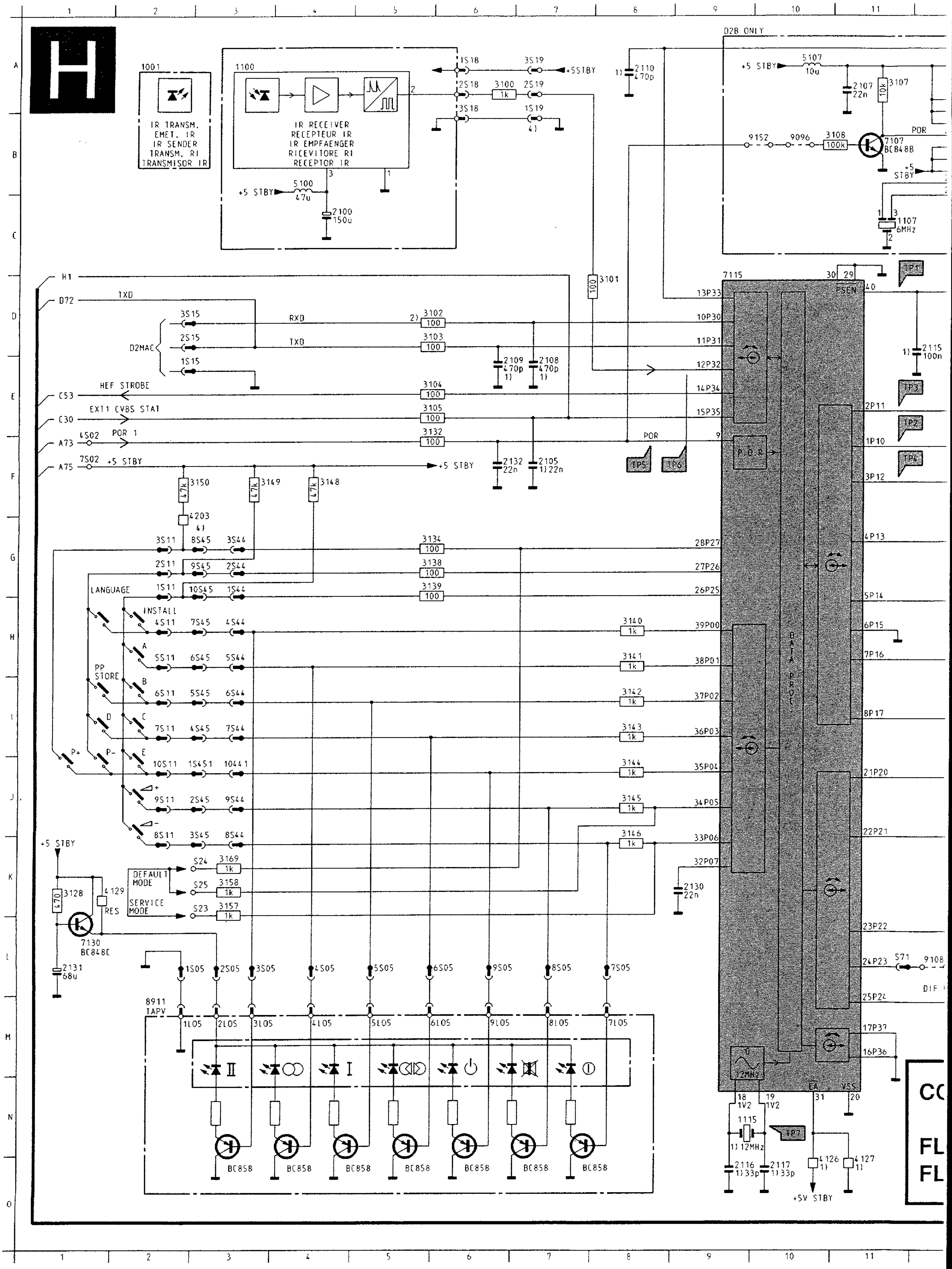

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

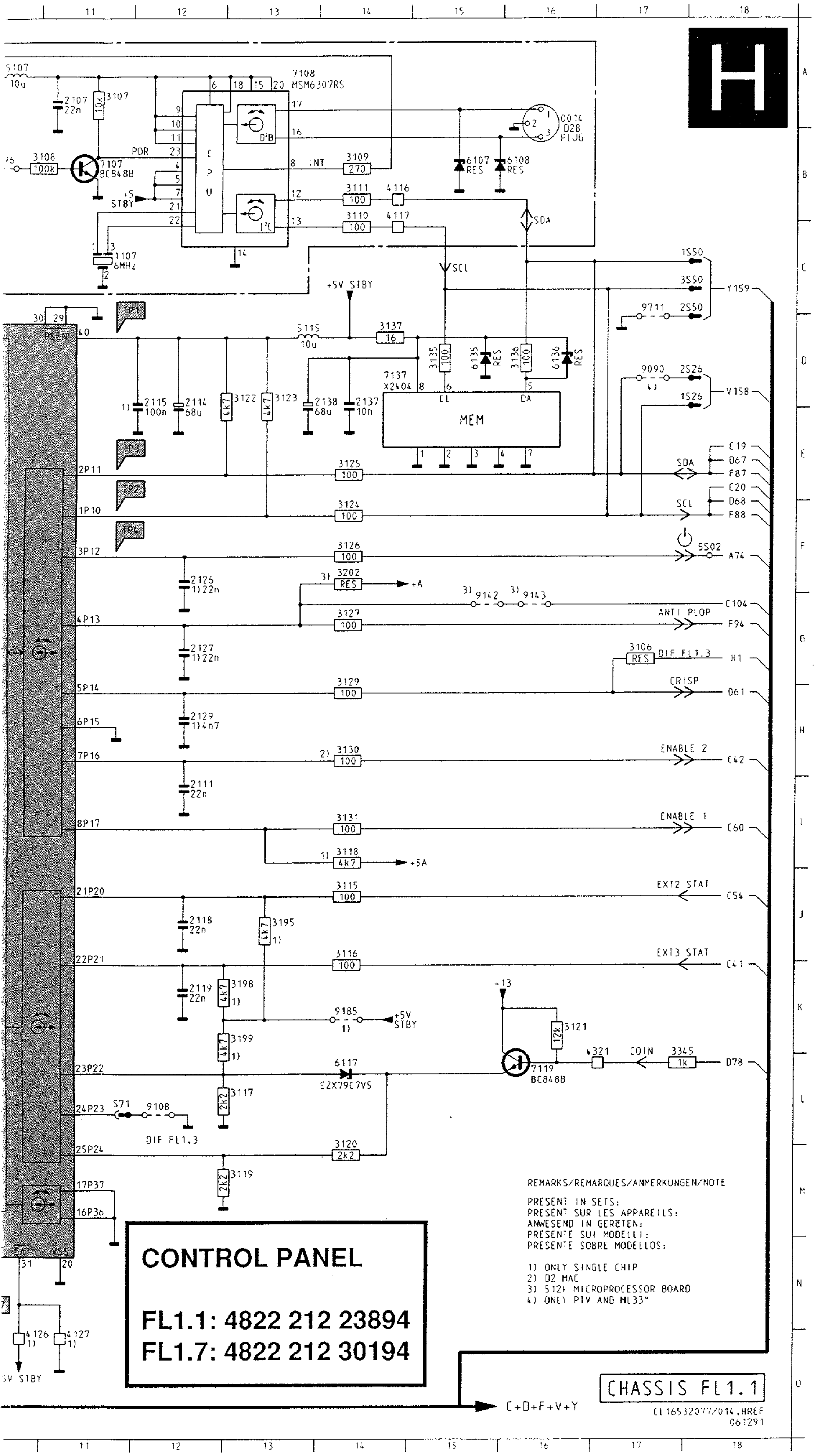
# 6.31 CHASSIS FL1.1 Platine TRC


E
E
PICTURE TUBE PANEL
BILDRÖHRE PLATTE
CARTE TUBE IMAGE
PANNELLO DEL CINESCOPIO
D81
BC-INFO
1D14
2709 27p
3702 1k
D85
2D14
3726 120k
6701 BAV103
+12
2721 8p2
2726 22n
3701 100
2731 1n
3720 82k
+200A
3733 18
1D13
B12
2704 3u3
3734 110k
3740 110k
D84
3D14 IN
B
3725 3k3
TP80
2710 56p
3724 2k7
7707 TDA6111Q
8 OUT
3728 1k5
+200A
2713 27n
OUT
4703
4702
3716 150k
6702 BAV103
2711 6p8
2706 22n
3711 100
2741 1n
3719 0
6715 BZD23-C24
6714 BYD33M
9711
2D13
B13
1D06
2D06
D83
4 D14 IN
G
3715 3k3
TP81
2720 56p
3714 2k7
7706 TDA6111Q
8 OUT
3718 1k5
2715 27n
TP85
TP86
TP83
11 D08
6 D08
8 D08
B
G
R
9
10
5
7
1
2D08
EHT
10 D08
9 D08
5 D08
7 D08
1D08
4709
3706 150k
6703 BAV103
3710 0
2701 6p8
2716 22n
3721 100
2751 1n
3708 1k5
5700 33u
5701 33u
B10
B9
D82
5 D14 IN
R
3705 3k3
TP82
2730 56p
3704 2k7
7705 TDA6111Q
8 OUT
5 D13
B14
9706 RES
2760 2n7
3 D13
B16
2717 68n
+12
3700 1k8
3727 1k5
3730 1k5
6700 LLZ-C3V0
2700 100n
2703 180p
6707 LLZ-C22
3736 33k
+200A
3738 82k
3735 10k
2708 330p
7704 BC856B
3737 20k
2712 22p
+12
2 D07
B11
3712 2k7
3731 27
2705 33u
2707 33n
D76
7D14
OUT
6D14
PBCL
NC
4D13
6D13
B15
B17
D86
B+D
CHASSIS FL1.1
CL26532055/015.EREF
150792
1 2 3 4 5 6 7 8 9
A B C D E F G H I J K L M N O

| | |
|---|---|
| 2700 | M 2 |
| 2701 | J 2 |
| 2703 | M 2 |
| 2704 | C 7 |
| 2705 | M 8 |
| 2706 | G 3 |
| 2707 | M 8 |
| 2708 | M 4 |
| 2709 | B 5 |
| 2710 | D 2 |
| 2711 | G 2 |
| 2712 | M 7 |
| 2713 | E 4 |
| 2715 | I 4 |
| 2716 | J 3 |
| 2717 | L 4 |
| 2720 | H 2 |
| 2721 | C 2 |
| 2726 | C 3 |
| 2730 | K 2 |
| 2731 | D 4 |
| 2741 | G 4 |
| 2751 | K 4 |
| 2760 | K 8 |
| 3700 | L 2 |
| 3701 | C 4 |
| 3702 | B 5 |
| 3704 | K 2 |
| 3705 | K 2 |
| 3706 | I 3 |
| 3708 | J 7 |
| 3710 | J 5 |
| 3711 | G 4 |
| 3712 | M 7 |
| 3714 | H 2 |
| 3715 | G 2 |
| 3716 | F 3 |
| 3718 | H 6 |
| 3719 | F 5 |
| 3720 | C 5 |
| 3721 | J 4 |
| 3724 | D 2 |
| 3726 | C 3 |
| 3727 | L 8 |
| 3728 | D 6 |
| 3730 | L 8 |
| 3731 | M 8 |
| 3733 | C 8 |
| 3734 | C 8 |
| 3735 | M 5 |
| 3736 | M 4 |
| 3737 | M 6 |
| 3738 | M 6 |
| 3740 | C 8 |
| 4702 | F 2 |
| 4703 | E 2 |
| 4709 | I 2 |
| 5700 | J 7 |
| 5701 | J 8 |
| 6700 | M 1 |
| 6701 | C 4 |
| 6702 | F 4 |
| 6703 | I 4 |
| 6707 | M 4 |
| 6714 | F 8 |
| 6715 | F 7 |
| 7704 | N 6 |
| 7705 | K 3 |
| 7706 | G 3 |
| 7707 | D 3 |
| 9706 | K 7 |
| 9711 | F 8 |

# Control / Bedienung / Commande


H
1001
IR TRANSM.
EMET. IR
IR SENDER
TRANSM. RI
TRANSMISOR IR
1100
IR RECEIVER
RECEPTEUR IR
IR EMPFAENGER
RICEVITORE RI
RECEPTOR IR
+5 STBY
5100 47u
2100 150u
1S18
2S18
3S18
3S19
2S19
1S19
3100 1k
+5STBY
2110 470p
D2B ONLY
5107 10u
2107 22n
3107 10k
9152
9096
3108 100k
7107 BC848B
POR
1107 6MHz
H1
D72
TXD
RXD
D2MAC
3S15
2S15
1S15
3101 100
3102 100
3103 100
2109 470p
2108 470p
HEF STROBE
C53
3104 100
EXT1 CVBS STAT
C30
3105 100
A73
4S02
POR 1
3132 100
A75
7S02
+5 STBY
2132 22n
2105 22n
TP5
TP6
3150 47k
3149 47k
3148 47k
4203
3S11 8S45 3S44
2S11 9S45 2S44
1S11 10S45 1S44
LANGUAGE
INSTALL
4S11 7S45 4S44
5S11 6S45 5S44
6S11 5S45 6S44
7S11 4S45 7S44
10S11 1S451 10441
9S11 2S45 9S44
8S11 3S45 8S44
PP STORE
A
B
C
D
E
P+
P-
3134 100
3138 100
3139 100
3140 1k
3141 1k
3142 1k
3143 1k
3144 1k
3145 1k
3146 1k
DEFAULT MODE
SERVICE MODE
S24 3169 1k
S25 3158 1k
S23 3157 1k
2130 22n
3128 470
4129 RES
7130 BC848C
2131 68u
1S05 2S05 3S05 4S05 5S05 6S05 9S05 8S05 7S05
8911 TAPV
1L05 2L05 3L05 4L05 5L05 6L05 9L05 8L05 7L05
BC858
7115
13P33
10P30
11P31
12P32
14P34
15P35
POR
28P27
27P26
26P25
39P00
38P01
37P02
36P03
35P04
34P05
33P06
32P07
DATA PROC
30 29
PSEN
40
TP1
TP2
TP3
TP4
2115 100n
2P11
1P10
3P12
4P13
5P14
6P15
7P16
8P17
21P20
22P21
23P22
24P23
25P24
17P37
16P36
S71
9108
DIF
12MHz
18 1V2
19 1V2
EA 31
VSS 20
1115 12MHz
TP7
2116 33p
2117 33p
4126
4127
+5V STBY
CO
FL
FL
A B C D E F G H I J K L M N O
1 2 3 4 5 6 7 8 9 10 11


H
7108
MSM6307RS
CPU
D²B
I²C
0014
D2B
PLUG
5107
10u
2107
22n
3107
10k
3108
100k
7107
BC848B
POR
INT
+5
STBY
1107
6MHz
3109
270
3111
100
3110
100
4116
4117
6107
RES
6108
RES
SDA
SCL
+5V STBY
5115
10u
3137
16
3135
100
6135
RES
3136
100
6136
RES
7137
X2404
MEM
2115
100n
2114
68u
3122
4k7
3123
4k7
2138
68u
2137
10n
1S50
3S50
2S50
9711
Y159
9090
2S26
1S26
V158
PSEN
TP1
TP2
TP3
TP4
2P11
1P10
3P12
4P13
5P14
6P15
7P16
8P17
21P20
22P21
23P22
24P23
25P24
17P37
16P36
EA
VSS
3125
100
3124
100
3126
100
3202
RES
+A
9142
9143
3127
100
3106
RES
DIF FL1.3
3129
100
3130
100
3131
100
3118
4k7
+5A
3115
100
3116
100
2126
22n
2127
22n
2129
4n7
2111
22n
2118
22n
2119
22n
3195
4k7
3198
4k7
3199
4k7
3117
2k2
3120
2k2
3119
2k2
9185
+5V STBY
6117
EZX79C7V5
S71
9108
DIF FL1.3
+13
3121
12k
7119
BC848B
4321
COIN
3345
1k
C19
D67
F87
C20
D68
F88
5S02
A74
C104
ANTI PLOP
F94
H1
CRISP
D61
ENABLE 2
C42
ENABLE 1
C60
EXT2 STAT
C54
EXT3 STAT
C41
D78
4126
4127
5V STBY
C+D+F+V+Y
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERÄTEN:
PRESENTE SUI MODELLI:
PRESENTE SOBRE MODELLOS:

1) ONLY SINGLE CHIP
2) D2 MAC
3) 512k MICROPROCESSOR BOARD
4) ONLY PTV AND ML33"

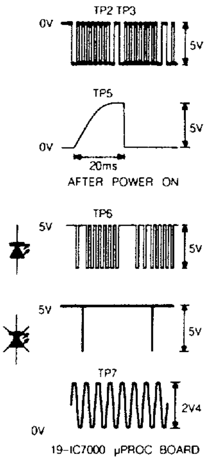
**CONTROL PANEL**

**FL1.1: 4822 212 23894**
**FL1.7: 4822 212 30194**

CHASSIS FL1.1

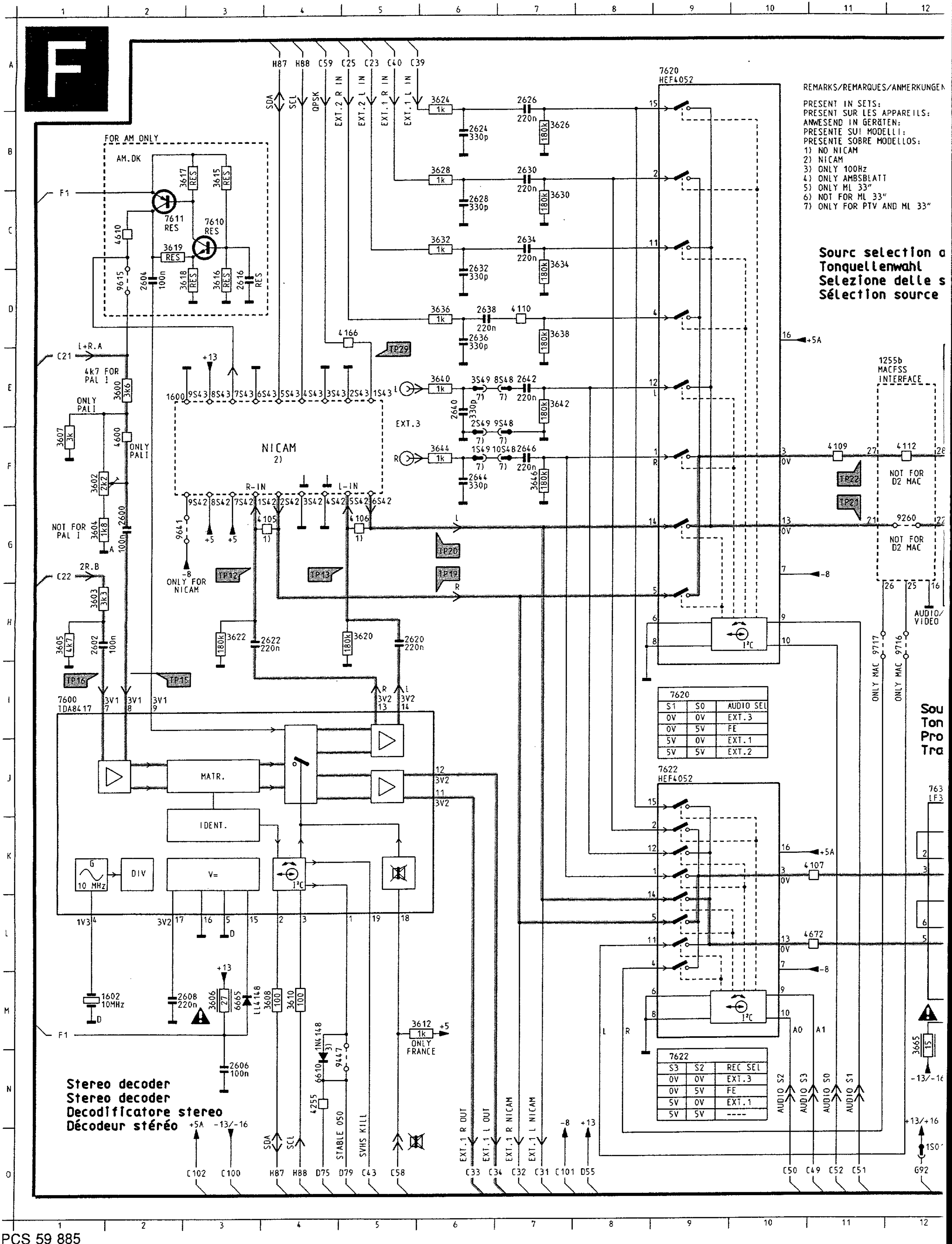
CL 16532077/014.HREF
061291

| | |
|---|---|
| 0014 | A16 |
| 1001 | A 2 |
| 1100 | A 3 |
| 1107 | C11 |
| 1115 | N 9 |
| 2100 | C 4 |
| 2105 | F 7 |
| 2107 | A11 |
| 2108 | E 7 |
| 2109 | E 6 |
| 2110 | A 8 |
| 2111 | I 12 |
| 2114 | D12 |
| 2115 | D12 |
| 2116 | 0 9 |
| 2117 | 010 |
| 2118 | J12 |
| 2119 | K12 |
| 2126 | F12 |
| 2127 | G12 |
| 2129 | H12 |
| 2130 | K 9 |
| 2131 | L 1 |
| 2132 | F 6 |
| 2137 | D14 |
| 2138 | D13 |
| 3100 | A 6 |
| 3101 | 0 8 |
| 3102 | D 5 |
| 3103 | 0 5 |
| 3104 | E 5 |
| 3105 | E 5 |
| 3106 | G17 |
| 3107 | A11 |
| 3108 | B11 |
| 3109 | B14 |
| 3110 | B14 |
| 3111 | B14 |
| 3115 | J14 |
| 3116 | J14 |
| 3117 | L13 |
| 3118 | I 14 |
| 3119 | M13 |
| 3120 | M14 |
| 3121 | K16 |
| 3122 | D13 |
| 3123 | D13 |
| 3124 | F14 |
| 3125 | E14 |
| 3126 | F14 |
| 3127 | G14 |
| 3128 | K 1 |
| 3129 | H14 |
| 3130 | H14 |
| 3131 | I 14 |
| 3132 | F 5 |
| 3134 | G 5 |
| 3135 | D15 |
| 3136 | D16 |
| 3137 | D14 |
| 3138 | G 5 |
| 3139 | G 5 |
| 3140 | H 8 |
| 3141 | H 8 |
| 3142 | I 8 |
| 3143 | I 8 |
| 3144 | J 8 |
| 3145 | J 8 |
| 3146 | K 8 |
| 3148 | F 4 |
| 3149 | F 3 |
| 3150 | F 2 |
| 3157 | K 3 |
| 3158 | K 3 |
| 3169 | K 3 |
| 3195 | J13 |
| 3198 | K13 |
| 3199 | K13 |
| 3202 | F14 |
| 3345 | L17 |
| 4116 | B14 |
| 4117 | B14 |
| 4126 | 010 |
| 4127 | 011 |
| 4129 | K 1 |
| 4203 | G 2 |
| 4321 | L17 |
| 5100 | B 4 |
| 5107 | A10 |
| 5115 | D13 |
| 6107 | B15 |
| 6108 | B16 |
| 6117 | L14 |
| 6135 | D15 |
| 6136 | 016 |
| 7107 | B11 |
| 7108 | A13 |
| 7119 | L16 |
| 7130 | L 1 |
| 7137 | D14 |
| 8911 | M 2 |
| 9090 | D17 |
| 9096 | B10 |
| 9108 | L12 |
| 9142 | G15 |
| 9143 | G16 |
| 9152 | B10 |
| 9185 | K14 |
| 9711 | C17 |



19-IC7000 µPROC BOARD

PRS 06956
T-26/113


F
H87 H88 C59 C25 C23 C40 C39
SDA SCL QPSK EXT.2 R IN EXT.2 L IN EXT.1 R IN EXT.1 L IN
FOR AM ONLY
AM.DK
F1
7611 RES
7610 RES
3617 RES
3615 RES
3619 RES
3618 RES
3616 RES
2616 RES
4610
9615
2604 100n
3624 1k
2624 330p
2626 220n
3626 180k
3628 1k
2628 330p
2630 220n
3630 180k
3632 1k
2632 330p
2634 220n
3634 180k
3636 1k
2636 330p
2638 220n
4110
3638 180k
4166
TP29
L+R.A
C21
4k7 FOR PAL I
3600 3k6
ONLY PAL I
3607 3k
4600
ONLY PAL I
3602 2k2
NOT FOR PAL I
3604 1k8
2600 100n
+13
1600 9S43 8S43 7S43 6S43 5S43 4S43 3S43 2S43 1S43
NICAM 2)
9S42 8S42 7S42 R-IN 1S42 2S42 3S42 4S42 L-IN 5S42 6S42
4105 1)
4106 1)
9641
+5 +5
-8 ONLY FOR NICAM
TP12
TP13
TP20
TP19
L
R
EXT.3
3640 1k
3S49 8S48 2642 7) 7) 220n
2640 330p
3642 180k
2S49 9S48 7) 7)
3644 1k
1S49 10S48 2646 7) 7) 220n
2644 330p
3646 180k
2R.B
C22
3603 3k3
3605 4k7
2602 100n
TP16
TP15
3622 180k
2622 220n
3620 180k
2620 220n
R 3V2 13
L 3V2 14
7600 TDA8417
3V1 7
3V1 8
3V1 9
MATR.
IDENT.
DIV
10 MHz
V=
I²C
12 3V2
11 3V2
1V3 4
3V2 17
16 5 15 2 3 1 19 18
1602 10MHz
2608 220n
+13
3606 27
6665 LL4148
3608 100
3610 100
6610 1N4148 3)
9447
4255
3612 1k +5 ONLY FRANCE
2606 100n
F1
+5A -13/-16
SDA SCL STABLE 050 SVHS KILL
EXT.1 R OUT EXT.1 L OUT EXT.1 R NICAM EXT.1 L NICAM
-8 +13
C102 C100 H87 H88 D75 D79 C43 C58 C33 C34 C32 C31 C101 D55
7620 HEF4052
15 2 11 4 12 1 14 5 6 8
16 +5A
3 0V
13 0V
7 -8
9 10
I²C
1255b MACFSS INTERFACE
4109 27 4112 28
TP22
TP21
NOT FOR D2 MAC
21 9260 22
NOT FOR D2 MAC
26 25 16
AUDIO/VIDEO
9717 ONLY MAC
9716 ONLY MAC
7622 HEF4052
15 2 12 1 14 5 11 4 6 8
16 +5A
3 0V 4107
13 0V 4672
7 -8
9 10
A0 A1
L R
AUDIO S2 AUDIO S3 AUDIO S0 AUDIO S1
C50 C49 C52 C51
763 LF3
3665 15
-13/-16
+13/+16
1501
G92
A B C D E F G H I J K L M N O
1 2 3 4 5 6 7 8 9 10 11 12

REMARKS/REMARQUES/ANMERKUNGEN

PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERÄTEN:
PRESENTE SU! MODELLI:
PRESENTE SOBRE MODELLOS:
1) NO NICAM
2) NICAM
3) ONLY 100Hz
4) ONLY AMBSBLATT
5) ONLY ML 33"
6) NOT FOR ML 33"
7) ONLY FOR PTV AND ML 33"

**Sourc selection a**
**Tonquellenwahl**
**Selezione delle s**
**Sélection source**

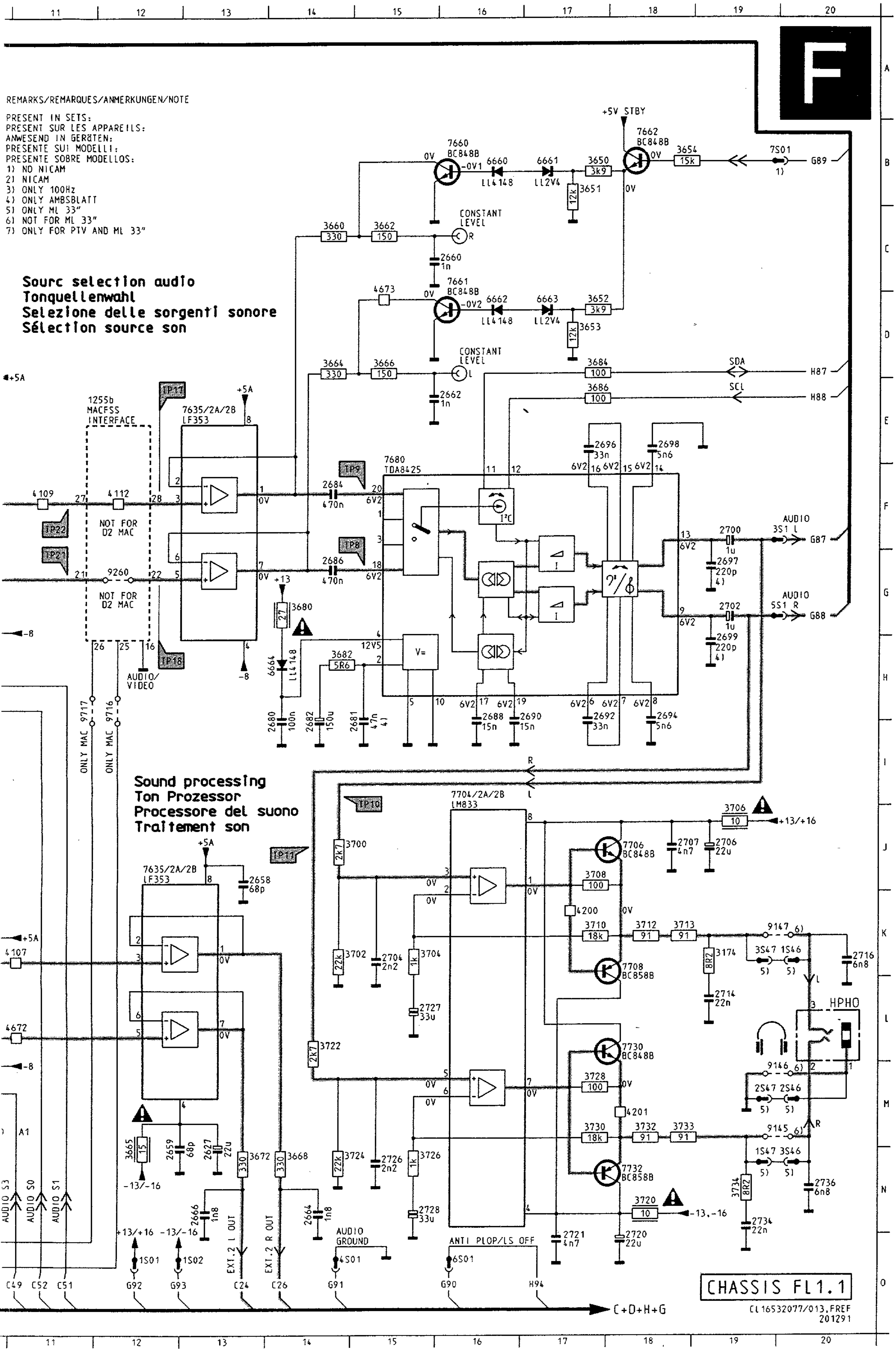
**Sou**
**Ton**
**Pro**
**Tra**

| 7620 | | |
|---|---|---|
| S1 | S0 | AUDIO SEL |
| 0V | 0V | EXT.3 |
| 0V | 5V | FE |
| 5V | 0V | EXT.1 |
| 5V | 5V | EXT.2 |

| 7622 | | |
|---|---|---|
| S3 | S2 | REC SEL |
| 0V | 0V | EXT.3 |
| 0V | 5V | FE |
| 5V | 0V | EXT.1 |
| 5V | 5V | ---- |

**Stereo decoder**
**Stereo decoder**
**Decodificatore stereo**
**Décodeur stéréo**

# Traitement audio


REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERäTEN:
PRESENTE SUI MODELLI:
PRESENTE SOBRE MODELLOS:

1) NO NICAM
2) NICAM
3) ONLY 100Hz
4) ONLY AMBSBLATT
5) ONLY ML 33"
6) NOT FOR ML 33"
7) ONLY FOR PTV AND ML 33"

**Sourc selection audio**
**Tonquellenwahl**
**Selezione delle sorgenti sonore**
**Sélection source son**

**Sound processing**
**Ton Prozessor**
**Processore del suono**
**Traitement son**

CHASSIS FL1.1

CL 16532077/013.FREF
201291

F
11
12
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18
19
20
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
+5V STBY
7660
BC848B
0V
-0V1
6660
LL4148
6661
LL2V4
3650
3k9
3651
12k
7662
BC848B
0V
3654
15k
7S01
1)
G89
CONSTANT LEVEL
R
3660
330
3662
150
2660
1n
4673
7661
BC848B
-0V2
6662
6663
3652
3653
L
3664
3666
3684
100
SDA
H87
3686
SCL
H88
2662
1n
TP17
+5A
1255b
MACFSS
INTERFACE
7635/2A/2B
LF353
4109
4112
NOT FOR D2 MAC
TP22
TP21
9260
2684
470n
2686
TP9
TP8
7680
TDA8425
6V2
12V5
V=
I²C
2696
33n
2698
5n6
2700
1u
2697
220p
4)
2702
2699
AUDIO
3S1 L
G87
5S1 R
G88
+13
3680
27
6664
LL4148
3682
5R6
2680
100n
2682
150u
2681
47n
2688
15n
2690
2692
2694
TP18
AUDIO/ VIDEO
-8
ONLY MAC 9717
ONLY MAC 9716
TP10
TP11
7704/2A/2B
LM833
3706
10
+13/+16
3700
2k7
7706
BC848B
2707
4n7
2706
22u
3708
4200
3710
18k
3712
91
3713
3174
8R2
9147
6)
3S47
1S46
5)
2716
6n8
3702
22k
2704
2n2
3704
1k
2727
33u
2714
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HPHO
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4201
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2S47
2S46
9145
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3732
3733
1S47
3S46
7732
BC858B
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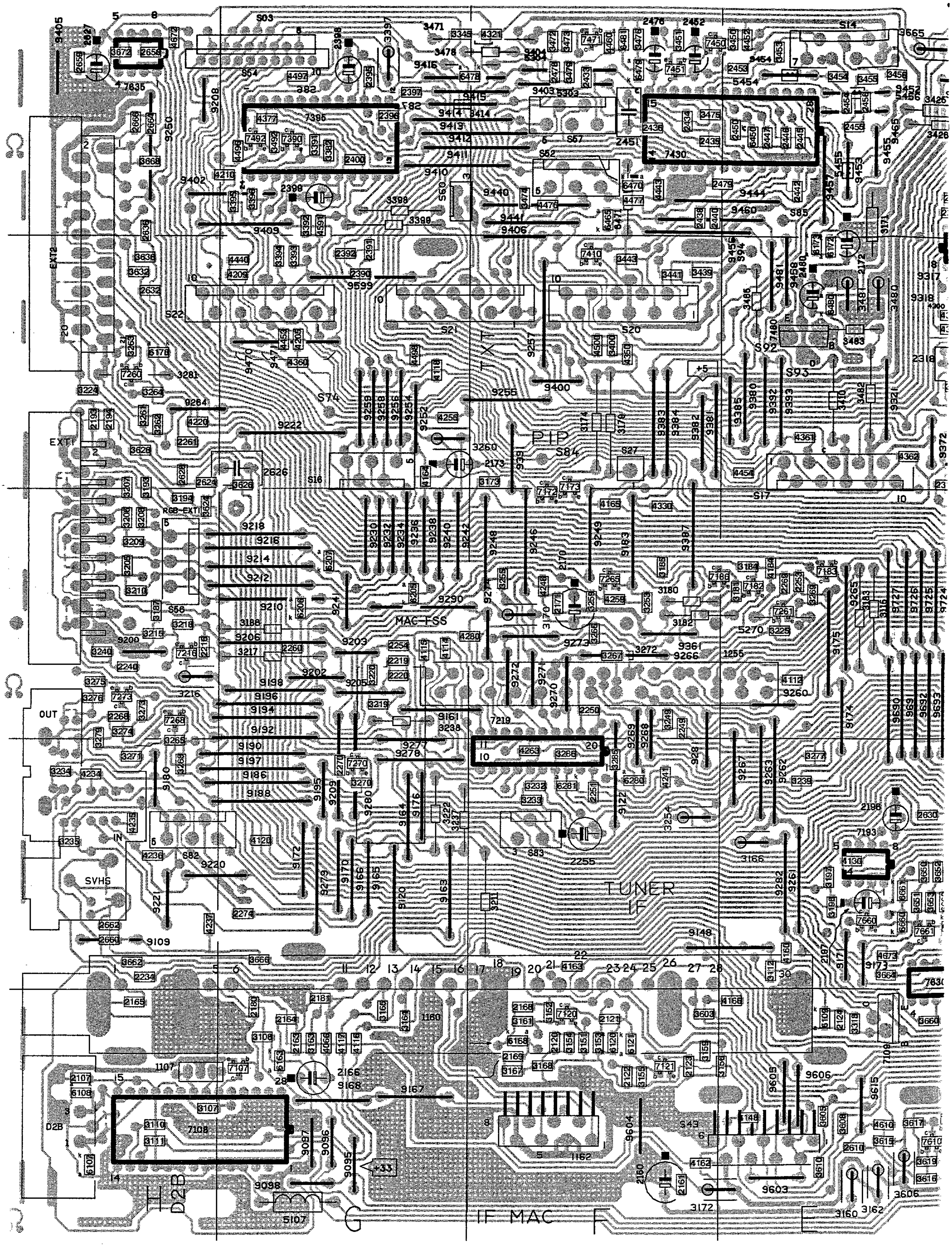
3734
2734
3720
-13,-16
3724
2726
3726
2728
2721
2720
22u
2658
68p
4107
4672
-13/-16
3665
15
2659
68p
2627
3672
3668
2666
1n8
2664
EXT.2 L OUT
EXT.2 R OUT
AUDIO GROUND
ANTI PLOP/LS OFF
1S01
1S02
4S01
6S01
AUDIO S3
AUDIO S0
AUDIO S1
A1
C49
C52
C51
G92
G93
C24
C26
G91
G90
H94
C+D+H+G

| | | | |
|---|---|---|---|
| 1255 | E11 | 3730 | M17 |
| 1600 | E 2 | 3732 | M18 |
| 1602 | M 1 | 3733 | M18 |
| 2600 | G 2 | 3734 | N19 |
| 2602 | H 1 | 4105 | G 4 |
| 2604 | D 2 | 4106 | G 5 |
| 2606 | N 3 | 4107 | K11 |
| 2608 | M 2 | 4109 | F11 |
| 2616 | D 3 | 4110 | D 7 |
| 2620 | H 5 | 4112 | F12 |
| 2622 | H 3 | 4166 | D 5 |
| 2624 | B 6 | 4200 | K17 |
| 2626 | A 7 | 4201 | M18 |
| 2627 | M13 | 4255 | N 4 |
| 2628 | C 6 | 4600 | F 2 |
| 2630 | B 7 | 4610 | C 2 |
| 2632 | D 6 | 4672 | L11 |
| 2634 | C 7 | 4673 | C15 |
| 2636 | D 6 | 6610 | N 4 |
| 2638 | D 6 | 6660 | B16 |
| 2640 | E 6 | 6661 | B17 |
| 2642 | E 7 | 6662 | D16 |
| 2644 | F 6 | 6663 | D17 |
| 2646 | F 7 | 6664 | H14 |
| 2658 | J13 | 6665 | M 3 |
| 2659 | M12 | 7600 | I 1 |
| 2660 | C16 | 7610 | C 3 |
| 2662 | E16 | 7611 | C 2 |
| 2664 | N14 | 7620 | A 9 |
| 2666 | N13 | 7622 | J 9 |
| 2680 | H14 | 7635 | E12 |
| 2681 | H15 | 7635 | J12 |
| 2682 | H14 | 7660 | B16 |
| 2684 | F14 | 7661 | C16 |
| 2686 | G14 | 7662 | B18 |
| 2688 | H16 | 7680 | E15 |
| 2690 | H16 | 7704 | I16 |
| 2692 | H17 | 7706 | J18 |
| 2694 | H18 | 7708 | K18 |
| 2696 | E17 | 7730 | L18 |
| 2697 | G19 | 7732 | N18 |
| 2698 | E18 | 9145 | M20 |
| 2699 | H19 | 9146 | M20 |
| 2700 | F19 | 9147 | K20 |
| 2702 | G19 | 9260 | G12 |
| 2704 | K15 | 9447 | N 5 |
| 2706 | J19 | 9615 | D 2 |
| 2707 | J18 | 9641 | G 2 |
| 2714 | L19 | 9716 | H12 |
| 2716 | K20 | 9717 | H11 |
| 2720 | O18 | | |
| 2721 | O17 | | |
| 2726 | N15 | | |
| 2727 | L15 | | |
| 2728 | N15 | | |
| 2734 | N19 | | |
| 2736 | N20 | | |
| 3174 | K19 | | |
| 3600 | E 2 | | |
| 3602 | F 1 | | |
| 3603 | H 1 | | |
| 3604 | G 1 | | |
| 3605 | H 1 | | |
| 3606 | M 3 | | |
| 3607 | F 1 | | |
| 3608 | M 4 | | |
| 3610 | M 4 | | |
| 3612 | M 6 | | |
| 3615 | B 3 | | |
| 3616 | D 3 | | |
| 3617 | B 3 | | |
| 3618 | D 3 | | |
| 3619 | C 2 | | |
| 3620 | H 5 | | |
| 3622 | H 3 | | |
| 3624 | A 6 | | |
| 3626 | B 7 | | |
| 3628 | B 6 | | |
| 3630 | C 7 | | |
| 3632 | C 6 | | |
| 3634 | C 7 | | |
| 3636 | D 6 | | |
| 3638 | D 7 | | |
| 3640 | E 6 | | |
| 3642 | E 7 | | |
| 3644 | F 6 | | |
| 3646 | F 7 | | |
| 3650 | B17 | | |
| 3651 | B17 | | |
| 3652 | D17 | | |
| 3653 | D17 | | |
| 3654 | B18 | | |
| 3660 | C14 | | |
| 3662 | C15 | | |
| 3664 | D14 | | |
| 3665 | M12 | | |
| 3666 | D15 | | |
| 3668 | N14 | | |
| 3672 | N13 | | |
| 3680 | G14 | | |
| 3682 | H14 | | |
| 3684 | D17 | | |
| 3686 | E17 | | |
| 3700 | J14 | | |
| 3702 | K14 | | |
| 3704 | K15 | | |
| 3706 | J19 | | |
| 3708 | J17 | | |
| 3710 | K17 | | |
| 3712 | K18 | | |
| 3713 | K18 | | |
| 3720 | N18 | | |
| 3722 | L14 | | |
| 3724 | N14 | | |
| 3726 | N15 | | |
| 3728 | M17 | | |

# Small signal panel  Klein-signal Platte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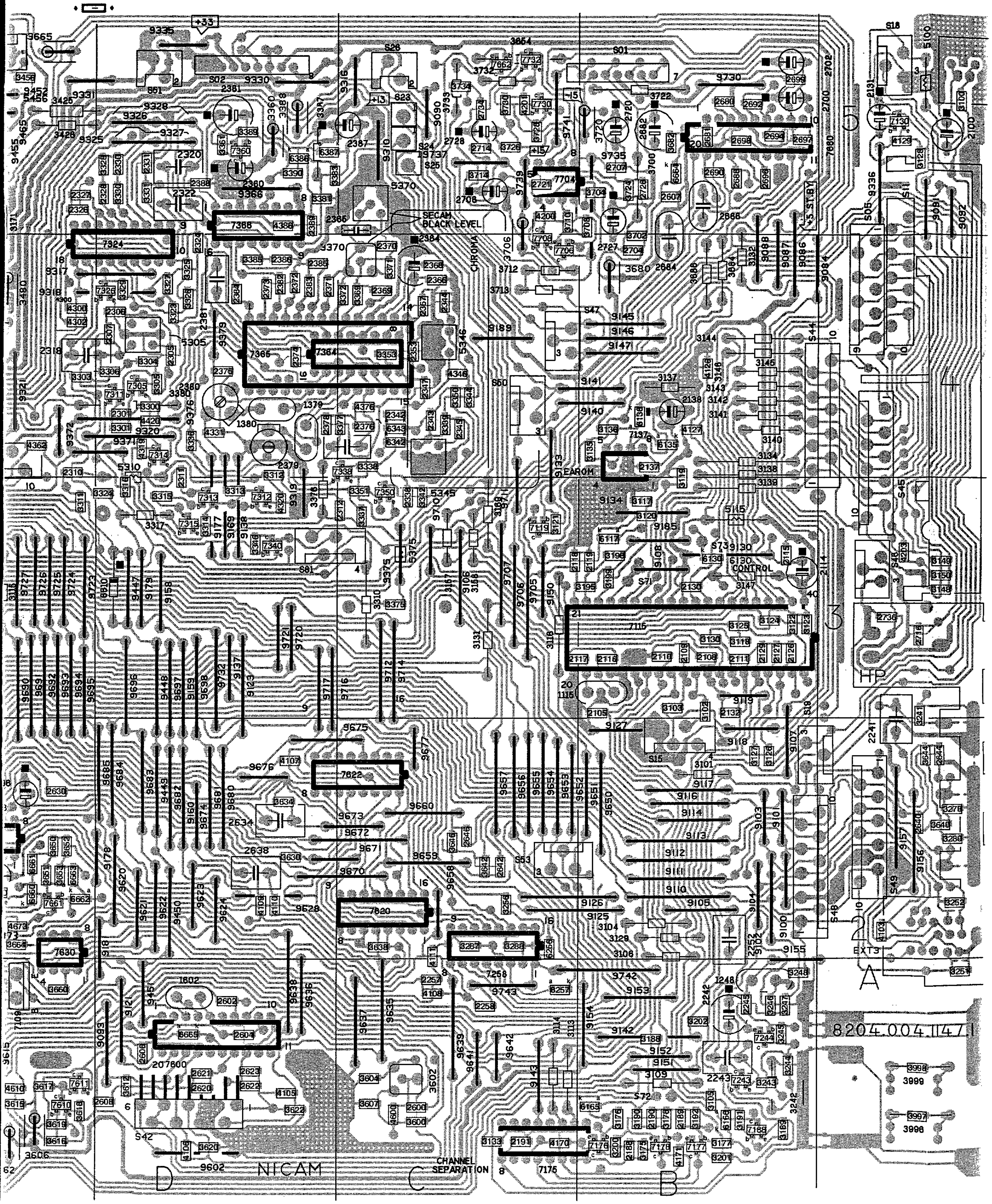
RGB-EXT1
OUT
IN
SVHS
D2B
PIP
TXT
MAC-FSS
TUNER IF
IF MAC
H
G
F
E
S03
S14
S22
S21
S20
S74
S84
S17
S16
S82
S83
S43
7395
7430
7108
1162
1160
5107
+5
+33

# Platine à petite signaux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+13
+15
-15
+5 ST.BY
SECAM
BLACK LEVEL
CHROMA
EAROM
CONTROL
HP
EXT3
NICAM
CHANNEL
SEPARATION
7924
7366
7365
7364
7704
7706
7708
7115
7137
7622
7620
7630
7258
7175
7176
7243
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7611
1379
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1602
1116
1248
S01
S02
S05
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S44
S45
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S49
S50
S53
S61
S71
S72
S73
8204 004 1147 1
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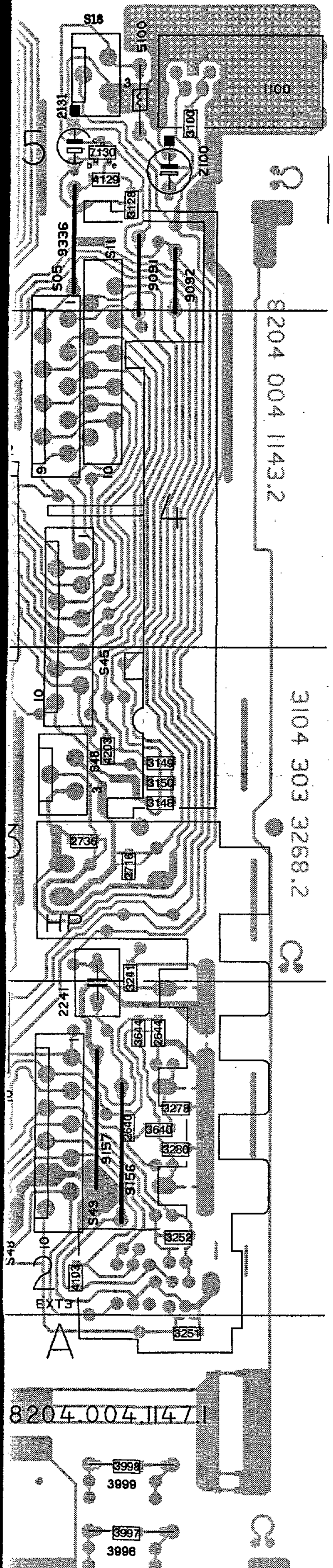

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| EXT2 H4 | 2173 G4 | 2391 G4 | 3101 B2 | 3188 B1 | 3306 D4 | 3602 C1 | 4160 E2 | 6172 E4 | 7620 C2 | 9174 E3 | 9330 D5 | 9671 D2 |
| EXT3 A3 | 2180 G1 | 2392 G4 | 3102 B3 | 3189 B1 | 3310 C3 | 3603 F1 | 4162 F1 | 6173 E4 | 7622 C2 | 9175 E3 | 9331 D5 | 9672 C2 |
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| S17 E4 | 2197 E2 | 2435 F5 | 3111 H1 | 3198 B3 | 3323 D4 | 3616 E1 | 4201 C5 | 6342 C4 | 7708 C4 | 9186 G2 | 9379 D4 | 9683 D2 |
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| 1602 D1 | 2330 D5 | 2640 A2 | 3150 A3 | 3252 A2 | 3392 G5 | 3710 C5 | 4477 F5 | 7216 H3 | 9126 C2 | 9255 F4 | 9458 E4 | |
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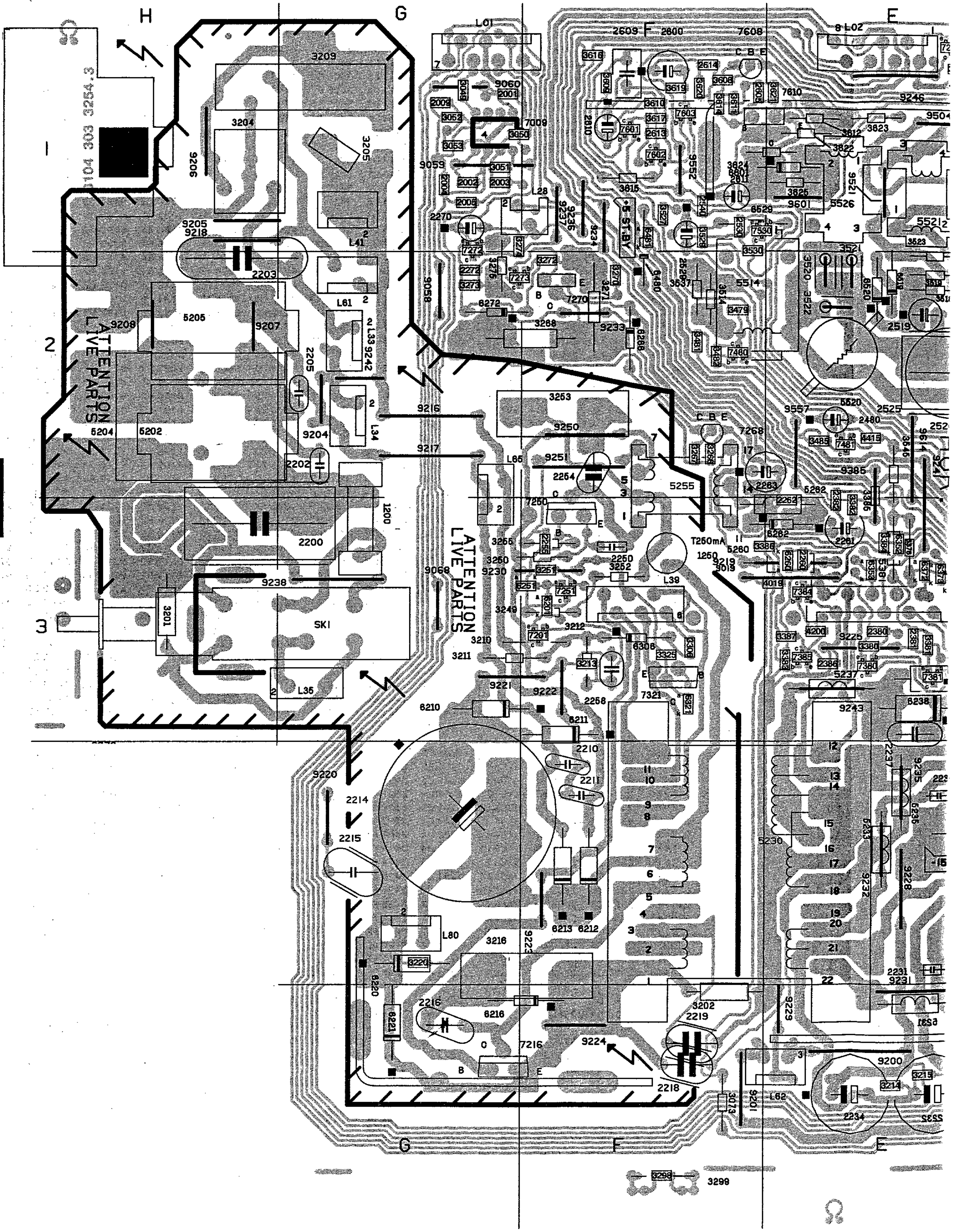
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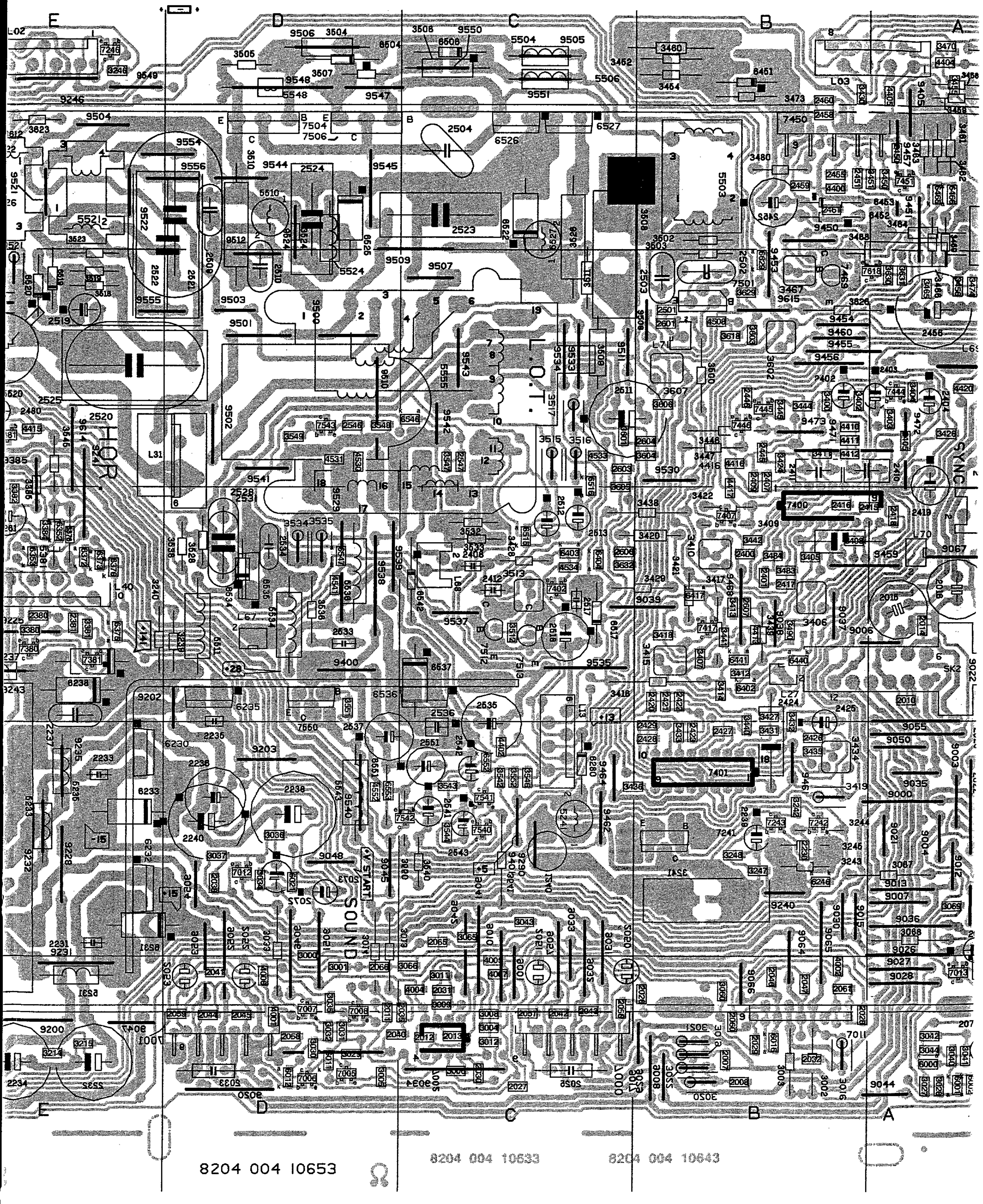
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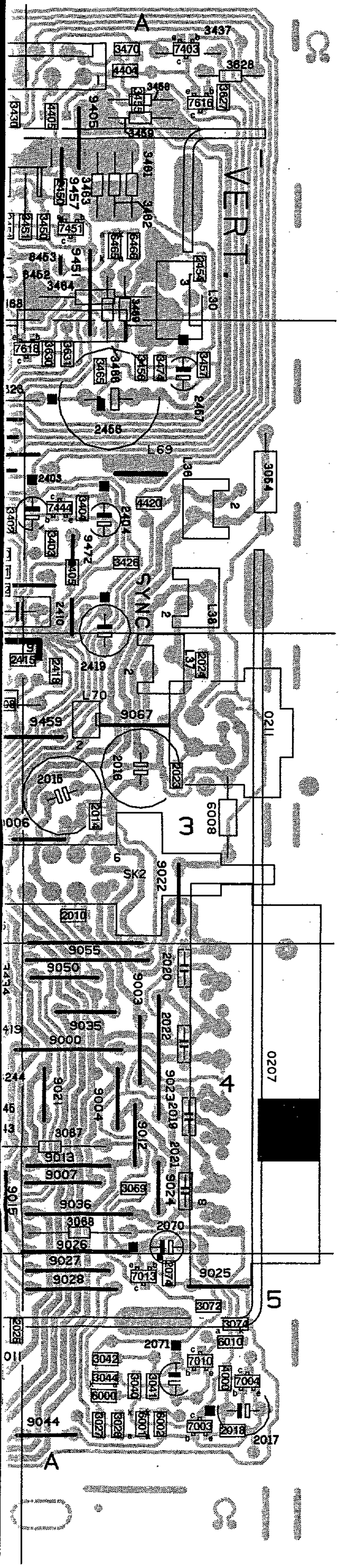

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| 6233 | E4 |
| 6235 | D3 |
| 6237 | E3 |
| 6238 | E3 |
| 6246 | B4 |
| 6251 | F3 |
| 6260 | E3 |
| 6262 | E3 |
| 6266 | F2 |
| 6272 | G2 |
| 6280 | C4 |
| 6302 | H5 |
| 6303 | H5 |
| 6304 | H5 |
| 6306 | F3 |
| 6308 | H5 |
| 6312 | H5 |
| 6315 | H5 |
| 6318 | H5 |
| 6319 | H5 |
| 6321 | F3 |
| 6331 | H4 |
| 6349 | H4 |
| 6350 | H4 |
| 6351 | H4 |
| 6352 | E3 |
| 6353 | E3 |
| 6355 | H4 |
| 6356 | H4 |
| 6357 | H4 |
| 6370 | H4 |
| 6371 | H4 |
| 6372 | E3 |
| 6373 | E3 |
| 6375 | E3 |
| 6376 | E3 |
| 6402 | B3 |
| 6403 | C3 |
| 6404 | C3 |
| 6417 | B3 |
| 6440 | B3 |
| 6441 | B3 |
| 6451 | B1 |
| 6452 | B1 |
| 6453 | B1 |
| 6465 | A1 |
| 6466 | A1 |
| 6480 | F1 |
| 6481 | F1 |
| 6504 | D1 |
| 6506 | C1 |
| 6515 | C3 |
| 6516 | C2 |
| 6517 | C3 |
| 6519 | E2 |
| 6520 | E2 |
| 6522 | C1 |
| 6525 | D1 |
| 6526 | C1 |
| 6527 | C1 |
| 6529 | F1 |
| 6534 | D3 |
| 6535 | D3 |
| 6536 | C3 |
| 6537 | C3 |
| 6542 | C3 |
| 6546 | C2 |
| 6547 | D3 |
| 6551 | D4 |
| 6552 | C4 |
| 6553 | D4 |
| 6601 | E1 |
| 6629 | B2 |
| 7000 | C5 |
| 7001 | D5 |
| 7002 | C5 |
| 7003 | A5 |
| 7004 | A5 |
| 7005 | D5 |
| 7006 | D5 |
| 7007 | D5 |
| 7008 | D5 |
| 7009 | G1 |
| 7010 | A5 |
| 7011 | B5 |
| 7012 | D4 |
| 7013 | A5 |
| 7201 | F3 |
| 7216 | G5 |
| 7241 | B4 |
| 7242 | B4 |
| 7243 | B4 |
| 7246 | E1 |
| 7250 | F3 |
| 7251 | F3 |
| 7268 | F2 |
| 7270 | F2 |
| 7272 | G1 |
| 7273 | G2 |
| 7305 | H5 |
| 7311 | H5 |
| 7312 | H5 |
| 7318 | H5 |
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| 7321 | F3 |
| 7360 | H4 |
| 7369 | H4 |
| 7370 | H4 |
| 7371 | H4 |
| 7380 | E3 |
| 7381 | E3 |
| 7384 | E3 |
| 7385 | E3 |
| 7400 | B3 |
| 7401 | B4 |
| 7402 | C3 |
| 7403 | A1 |
| 7407 | B3 |
| 7417 | B3 |
| 7444 | A2 |
| 7445 | B2 |
| 7446 | B2 |
| 7450 | A1 |
| 7451 | A1 |
| 7469 | B2 |
| 7480 | F2 |
| 7481 | E2 |
| 7501 | B2 |
| 7504 | D1 |
| 7506 | D1 |
| 7512 | C3 |
| 7513 | C3 |
| 7530 | F1 |
| 7540 | C4 |
| 7541 | C4 |
| 7542 | C4 |
| 7543 | D2 |
| 7550 | D3 |
| 7601 | F1 |
| 7602 | F1 |
| 7603 | F1 |
| 7608 | F1 |
| 7610 | E1 |
| 7616 | A1 |
| 7618 | A2 |
| 9000 | A4 |
| 9001 | C5 |
| 9003 | A4 |
| 9004 | A4 |
| 9006 | A3 |
| 9007 | A4 |
| 9008 | B5 |
| 9010 | C5 |
| 9012 | A4 |
| 9013 | A4 |
| 9015 | B4 |
| 9017 | B5 |
| 9019 | E3 |
| 9020 | D5 |
| 9021 | A4 |
| 9022 | A3 |
| 9023 | A4 |
| 9024 | A4 |
| 9025 | A5 |
| 9026 | A4 |
| 9027 | A5 |
| 9028 | A5 |
| 9029 | B5 |
| 9030 | B4 |
| 9031 | C4 |
| 9032 | C5 |
| 9033 | C5 |
| 9034 | C5 |
| 9035 | A4 |
| 9036 | A4 |
| 9037 | B3 |
| 9038 | B3 |
| 9039 | B3 |
| 9041 | C4 |
| 9042 | C4 |
| 9043 | D5 |
| 9044 | A5 |
| 9045 | D4 |
| 9046 | D4 |
| 9047 | E5 |
| 9048 | D4 |
| 9050 | A4 |
| 9051 | D4 |
| 9052 | D4 |
| 9053 | D5 |
| 9054 | D4 |
| 9055 | A4 |
| 9056 | A3 |
| 9057 | C5 |
| 9058 | G2 |
| 9059 | G1 |
| 9060 | G1 |
| 9064 | B5 |
| 9065 | B4 |
| 9066 | B5 |
| 9067 | A3 |
| 9068 | G3 |
| 9200 | E5 |
| 9201 | F5 |
| 9202 | D3 |
| 9203 | D4 |
| 9204 | G2 |
| 9205 | H1 |
| 9206 | H1 |
| 9207 | H2 |
| 9208 | H2 |
| 9216 | G2 |
| 9217 | G2 |
| 9218 | H1 |
| 9219 | E3 |
| 9220 | G4 |
| 9221 | G3 |
| 9222 | F3 |
| 9223 | F4 |
| 9224 | F5 |
| 9225 | E3 |
| 9228 | E4 |
| 9229 | E5 |
| 9230 | F3 |
| 9231 | E5 |
| 9232 | E4 |
| 9233 | F2 |
| 9234 | F1 |
| 9235 | E4 |
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| 9237 | F1 |
| 9238 | G3 |
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| 9241 | E3 |
| 9242 | G2 |
| 9243 | E3 |
| 9246 | E1 |
| 9250 | F2 |
| 9251 | F2 |
| 9290 | C4 |
| 9300 | H5 |
| 9302 | H4 |
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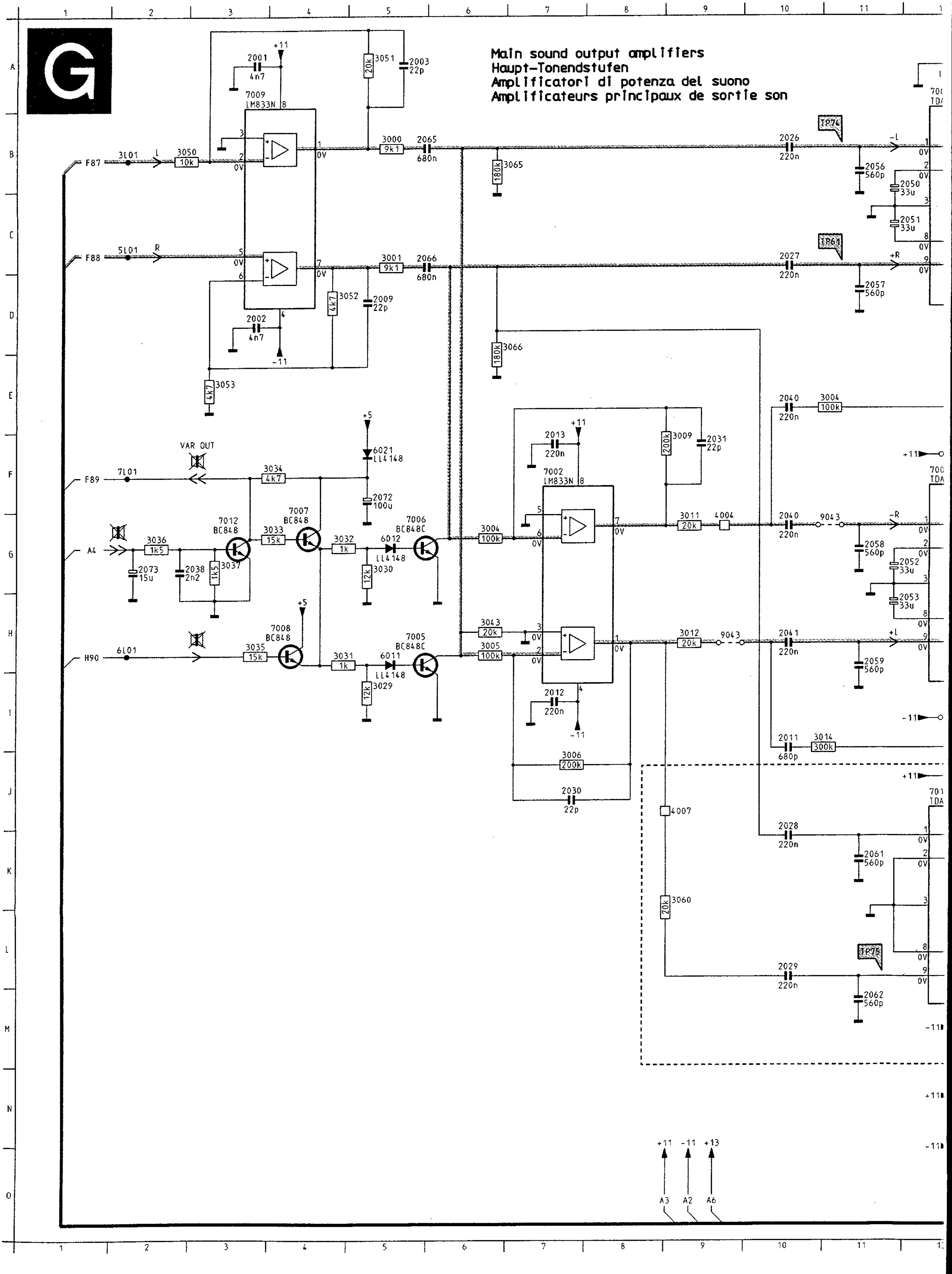
| 9400 | D3 |
| 9401 | C4 |
| 9405 | A1 |
| 9450 | B1 |
| 9451 | A1 |
| 9453 | B2 |
| 9454 | B2 |
| 9455 | B2 |
| 9456 | B2 |
| 9457 | A1 |
| 9459 | B3 |
| 9460 | B2 |
| 9461 | B4 |
| 9462 | C4 |
| 9464 | C4 |
| 9468 | B3 |
| 9471 | B2 |
| 9472 | A2 |
| 9473 | B2 |
| 9500 | D2 |
| 9501 | D2 |
| 9502 | D2 |
| 9503 | D2 |
| 9504 | E1 |
| 9505 | C1 |
| 9506 | D1 |
| 9507 | C2 |
| 9508 | B2 |
| 9509 | C1 |
| 9510 | D2 |
| 9511 | C2 |
| 9512 | D2 |
| 9521 | E1 |
| 9522 | E1 |
| 9524 | D1 |
| 9529 | D3 |
| 9530 | B2 |
| 9533 | C2 |
| 9534 | C2 |
| 9535 | C3 |
| 9537 | C3 |
| 9538 | D3 |
| 9539 | D3 |
| 9540 | D4 |
| 9541 | D2 |
| 9542 | C2 |
| 9543 | C2 |
| 9544 | D1 |
| 9545 | D1 |
| 9547 | D1 |
| 9548 | D1 |
| 9549 | E1 |
| 9550 | C1 |
| 9551 | C1 |
| 9552 | F1 |
| 9554 | D1 |
| 9555 | E2 |
| 9556 | D1 |
| 9557 | E2 |
| 9601 | E1 |
| 9614 | E2 |
| 9615 | B2 |

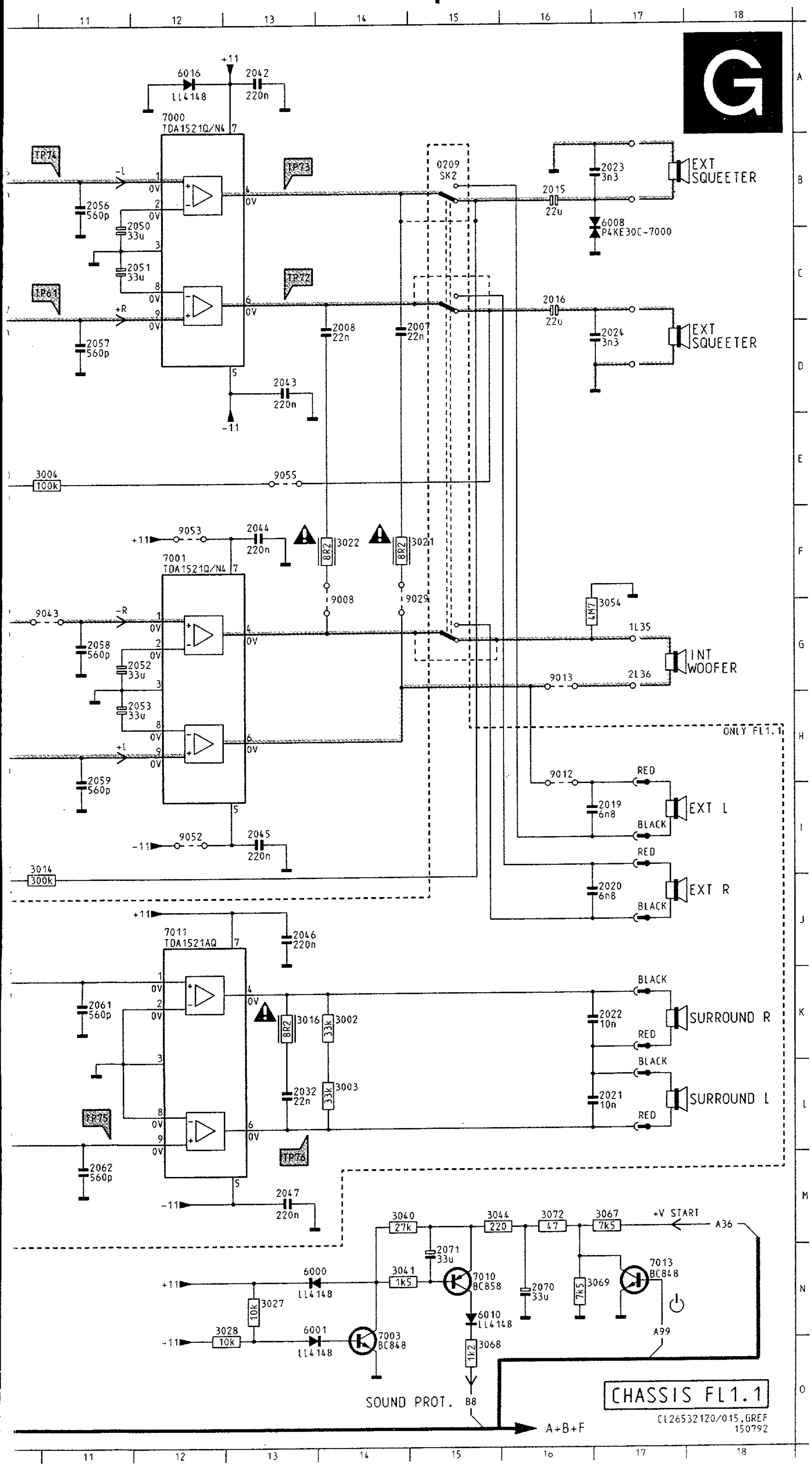
# Audio amplification / Tonsignal Verstärker /



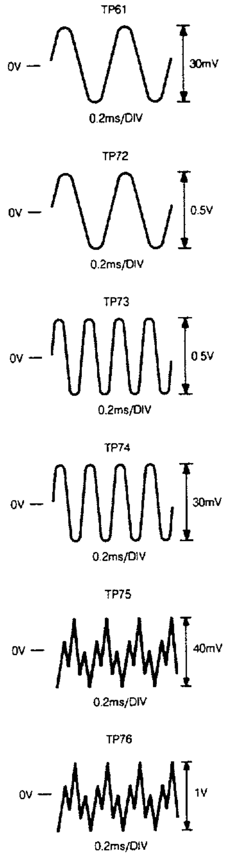
Main sound output amplifiers
Haupt-Tonendstufen
Amplificatori di potenza del suono
Amplificateurs principaux de sortie son

G
F87
3L01
L
3050
10k
F88
5L01
R
F89
7L01
VAR OUT
A4
H90
6L01
2001
4n7
+11
7009
LM833N
3051
20k
2003
22p
3000
9k1
2065
680n
3001
2066
3052
4k7
2009
22p
2002
-11
3053
3065
180k
3066
2026
220n
TP74
-L
2056
560p
2050
33u
2051
2027
TP61
+R
2057
6021
LL4148
2072
100u
3034
3036
1k5
2073
15u
2038
2n2
3037
7012
BC848
3033
15k
7007
3032
1k
6012
3030
12k
7006
BC848C
7008
3035
3031
6011
3029
7005
3004
100k
3043
20k
3005
2013
220n
7002
3009
200k
2031
3011
4004
2040
9043
2058
2052
2053
2012
3012
2041
+L
2059
3006
2030
2011
680p
3014
300k
4007
3060
2028
2061
2029
2062
TP75
+11
-11
+13
A3
A2
A6
0V

# Amplificateur audio


G
11
12
13
14
15
16
17
18
6016
LL4148
+11
2042
220n
7000
TDA1521Q/N4
TP74
TP73
TP72
TP61
-L
+R
2056
560p
2050
33u
2051
33u
2057
560p
0V
0209
SK2
2015
22u
2023
3n3
6008
P4KE30C-7000
EXT
SQUEETER
2016
22u
2024
3n3
2008
22n
2007
22n
2043
220n
-11
3004
100k
9055
+11
9053
2044
220n
3022
8R2
3021
9008
9029
7001
TDA1521Q/N4
9043
-R
+L
2058
560p
2052
33u
2053
33u
2059
560p
3054
4M7
1L35
INT
WOOFER
9013
2L36
ONLY FL1.1
9012
RED
BLACK
2019
6n8
EXT L
2020
6n8
EXT R
9052
2045
220n
3014
300k
7011
TDA1521AQ
2046
220n
2061
560p
3016
3002
33k
3003
33k
2032
22n
2022
10n
2021
10n
SURROUND R
SURROUND L
TP75
TP76
2062
560p
2047
220n
3040
27k
3044
220
3072
47
3067
7k5
+V START
A36
2071
33u
6000
LL4148
3041
1k5
7010
BC858
2070
33u
3069
7k5
7013
BC848
3027
10k
3028
10k
6001
LL4148
7003
BC848
6010
LL4148
3068
1k2
A99
SOUND PROT.
B8
A+B+F
CHASSIS FL1.1
CL26532120/015.GREF
150792

| | | | |
|---|---|---|---|
| 0209 | B15 | 9008 | F14 |
| 2001 | A 3 | 9012 | H16 |
| 2002 | D 3 | 9013 | G16 |
| 2003 | A 5 | 9029 | F14 |
| 2007 | D14 | 9043 | G11 |
| 2008 | D14 | 9043 | H 9 |
| 2009 | D 5 | 9052 | I12 |
| 2011 | I10 | 9053 | F12 |
| 2012 | I 7 | 9055 | E13 |
| 2013 | F 7 | | |
| 2015 | B16 | | |
| 2016 | C16 | | |
| 2019 | I17 | | |
| 2020 | J17 | | |
| 2021 | L17 | | |
| 2022 | K17 | | |
| 2023 | B17 | | |
| 2024 | D17 | | |
| 2026 | B10 | | |
| 2027 | C10 | | |
| 2028 | K10 | | |
| 2029 | L10 | | |
| 2030 | J 7 | | |
| 2031 | F 9 | | |
| 2032 | L13 | | |
| 2038 | G 2 | | |
| 2040 | E10 | | |
| 2040 | G10 | | |
| 2041 | H10 | | |
| 2042 | A13 | | |
| 2043 | D13 | | |
| 2044 | F13 | | |
| 2045 | I13 | | |
| 2046 | J13 | | |
| 2047 | M13 | | |
| 2050 | B11 | | |
| 2051 | C11 | | |
| 2052 | G11 | | |
| 2053 | H11 | | |
| 2056 | B11 | | |
| 2057 | D11 | | |
| 2058 | G11 | | |
| 2059 | H11 | | |
| 2061 | K11 | | |
| 2062 | M11 | | |
| 2065 | B 5 | | |
| 2066 | C 5 | | |
| 2070 | N16 | | |
| 2071 | N15 | | |
| 2072 | F 5 | | |
| 2073 | G 2 | | |
| 3000 | B 5 | | |
| 3001 | C 5 | | |
| 3002 | K14 | | |
| 3003 | L14 | | |
| 3004 | G 6 | | |
| 3004 | E11 | | |
| 3005 | H 6 | | |
| 3006 | J 7 | | |
| 3009 | F 9 | | |
| 3011 | G 9 | | |
| 3012 | H 9 | | |
| 3014 | I11 | | |
| 3016 | K13 | | |
| 3021 | F15 | | |
| 3022 | F14 | | |
| 3027 | N13 | | |
| 3028 | N13 | | |
| 3029 | I 5 | | |
| 3030 | G 5 | | |
| 3031 | H 4 | | |
| 3032 | G 4 | | |
| 3033 | G 4 | | |
| 3034 | F 4 | | |
| 3035 | H 3 | | |
| 3036 | G 2 | | |
| 3037 | G 3 | | |
| 3040 | M14 | | |
| 3041 | N14 | | |
| 3043 | H 6 | | |
| 3044 | M15 | | |
| 3050 | B 2 | | |
| 3051 | A 5 | | |
| 3052 | D 4 | | |
| 3053 | E 3 | | |
| 3054 | F17 | | |
| 3060 | K 9 | | |
| 3065 | B 6 | | |
| 3066 | D 6 | | |
| 3067 | M17 | | |
| 3068 | O15 | | |
| 3069 | N16 | | |
| 3072 | M16 | | |
| 4004 | G 9 | | |
| 4007 | J 9 | | |
| 6000 | N13 | | |
| 6001 | N13 | | |
| 6008 | B17 | | |
| 6010 | N15 | | |
| 6011 | H 5 | | |
| 6012 | G 5 | | |
| 6016 | A12 | | |
| 6021 | F 5 | | |
| 7000 | A12 | | |
| 7001 | F12 | | |
| 7002 | F 7 | | |
| 7003 | O14 | | |
| 7005 | H 5 | | |
| 7006 | G 5 | | |
| 7007 | G 4 | | |
| 7008 | H 4 | | |
| 7009 | A 3 | | |
| 7010 | N15 | | |
| 7011 | J12 | | |
| 7012 | G 3 | | |
| 7013 | N17 | | |



PRS.06962
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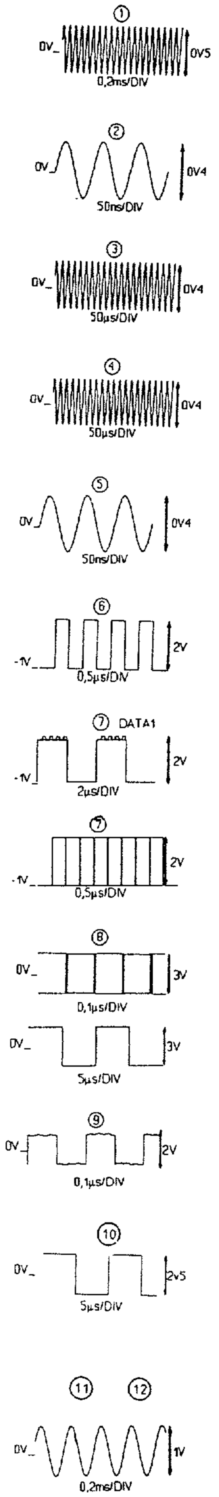

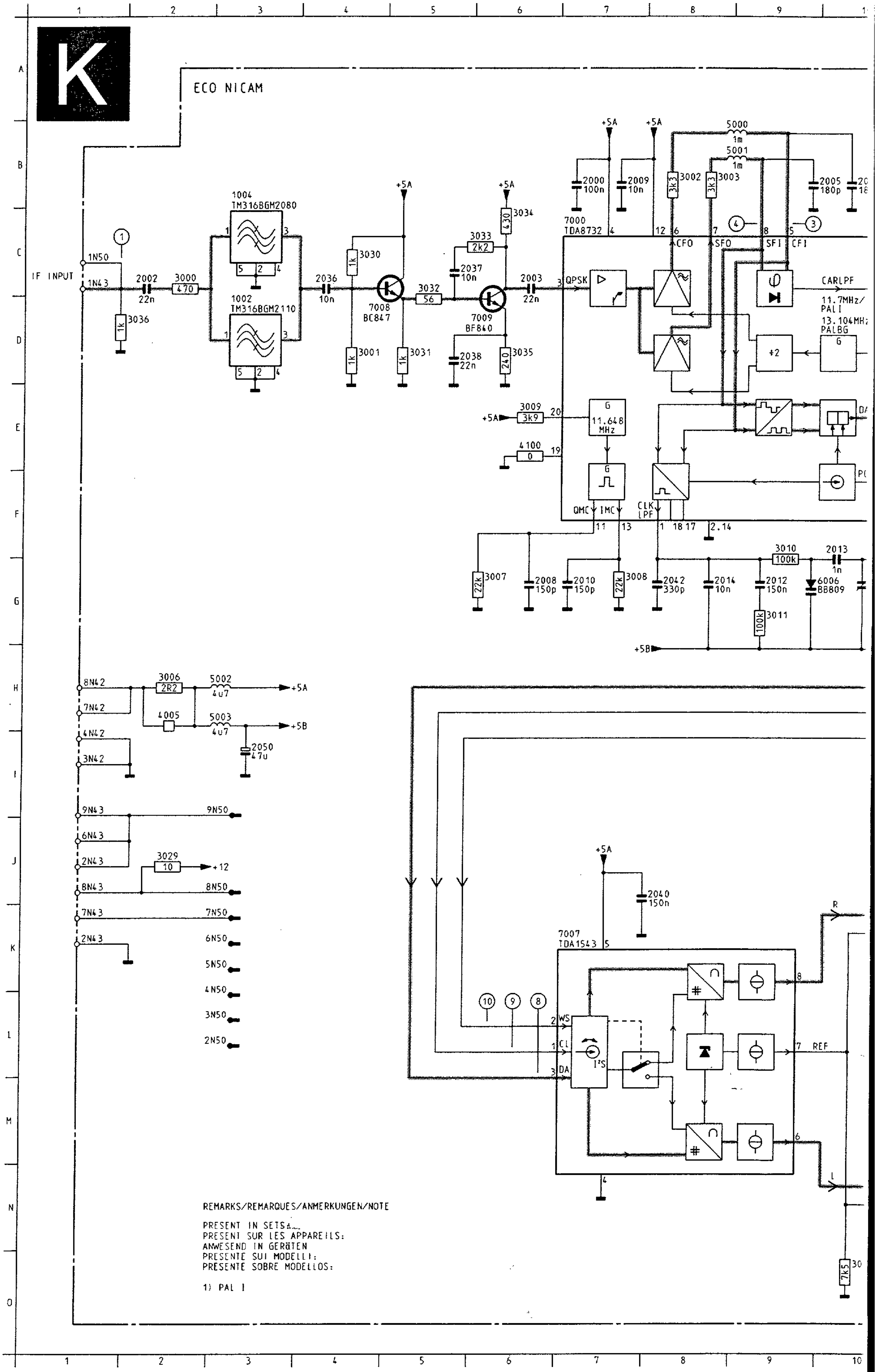
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C
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E
F
G
H
I
J
K
L
M
N
O
K
ECO NICAM
IF INPUT
1N50
1N43
①
2002
22n
3000
470
3036
1k
1004
TM316BGM2080
1002
TM316BGM2110
2036
10n
3030
1k
3001
1k
+5A
7008
BC847
3031
1k
3032
56
3033
2k2
2037
10n
2038
22n
7009
BF840
3034
430
3035
240
2003
22n
+5A
2000
100n
2009
10n
3002
3k3
3003
3k3
5000
1m
5001
1m
2005
180p
7000
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QPSK
CFO
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SFI
CFI
④
③
CARLPF
11.7MHz/
PAL I
13.104MHz
PALBG
G
÷2
+5A
3009
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G
11.648
MHz
G
QMC
IMC
CLK
LPF
PC
20
19
11
13
1
18 17
2.14
3007
22k
2008
150p
2010
150p
3008
22k
2042
330p
2014
10n
3010
100k
2013
1n
2012
150n
3011
100k
6006
BB809
+5B
8N42
7N42
4N42
3N42
3006
2R2
4005
5002
4u7
5003
4u7
+5A
+5B
2050
47u
9N43
6N43
2N43
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9N50
3029
10
+12
8N50
7N50
6N50
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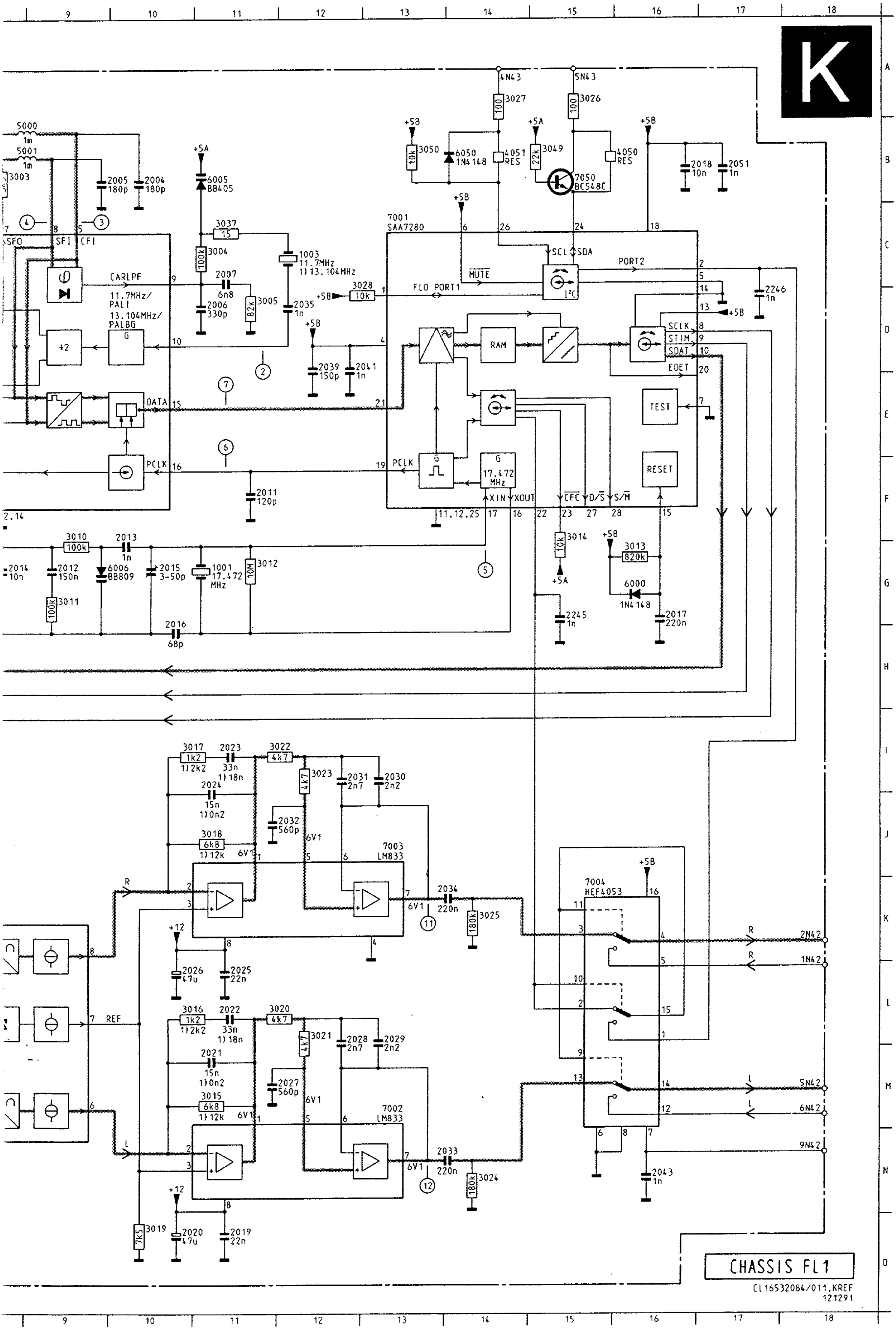
3N50
2N50
+5A
2040
150n
7007
TDA1543
⑩
⑨
⑧
WS
CL
DA
I²S
R
REF
L
7K5
30

REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERÄTEN
PRESENTE SUI MODELLI:
PRESENTE SOBRE MODELLOS:

1) PAL I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C
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H
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K
L
M
N
O
4N43
5N43
3027
100
3026
100
+5B
3050
10k
6050
1N4148
4051
RES
+5A
3049
22k
7050
BC548C
4050
RES
+5B
2018
10n
2051
1n
5000
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5001
1m
3003
2005
180p
2004
180p
+5A
6005
BB405
3037
15
3004
100k
1003
11.7MHz
1) 13.104MHz
2007
6n8
2006
330p
3005
82k
2035
1n
SFO
SFI
CFI
CARLPF
11.7MHz/
PALI
13.104MHz/
PALBG
G
÷2
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+5B
2039
150p
2041
1n
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SAA7280
MUTE
FLO PORT1
SCL
SDA
PORT2
I²C
RAM
SCLK
STIM
SDAT
EDET
TEST
RESET
G
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MHz
XIN
XOUT
CFC
D/S
S/M
11,12,25
2246
1n
+5B
2011
120p
2.14
3010
100k
2013
1n
2014
10n
2012
150n
6006
BB809
2015
3-50p
1001
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MHz
3012
10M
3011
100k
2016
68p
3014
10k
+5A
+5B
3013
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2245
1n
2017
220n
3017
1k2
1) 2k2
2023
33n
1) 18n
3022
4k7
2024
15n
1) 0n2
3023
4k7
2031
2n7
2030
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1) 12k
6V1
7003
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HEF4053
R
2N42
R
1N42
REF
3016
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1) 18n
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2021
15n
1) 0n2
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4k7
2028
2n7
2029
2n2
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6V1
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2019
22n
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220n
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6N42
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CHASSIS FL1
CL 16532084/011.KREF
121291

| | |
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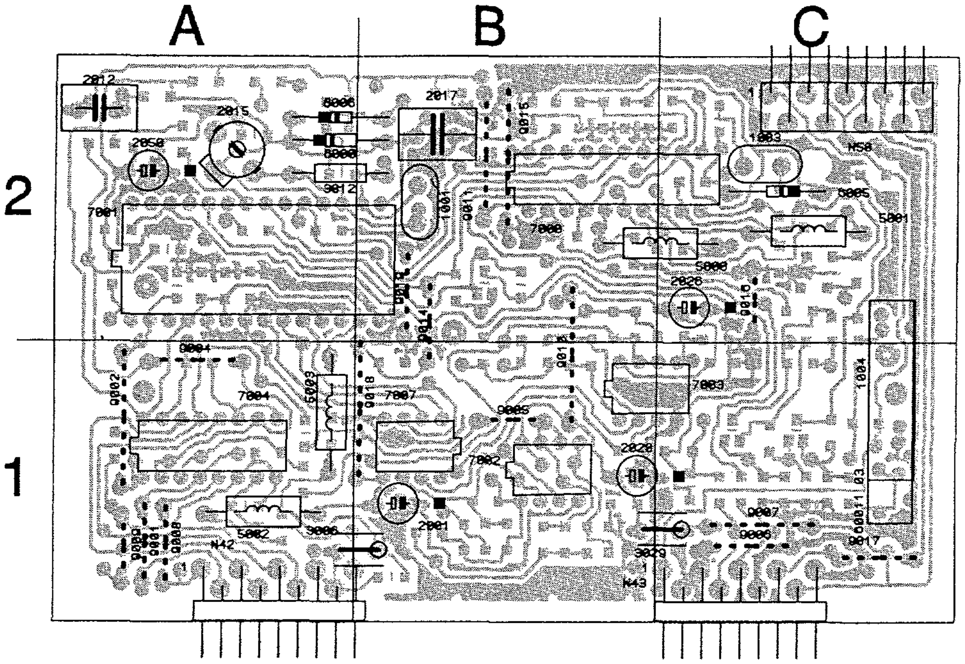
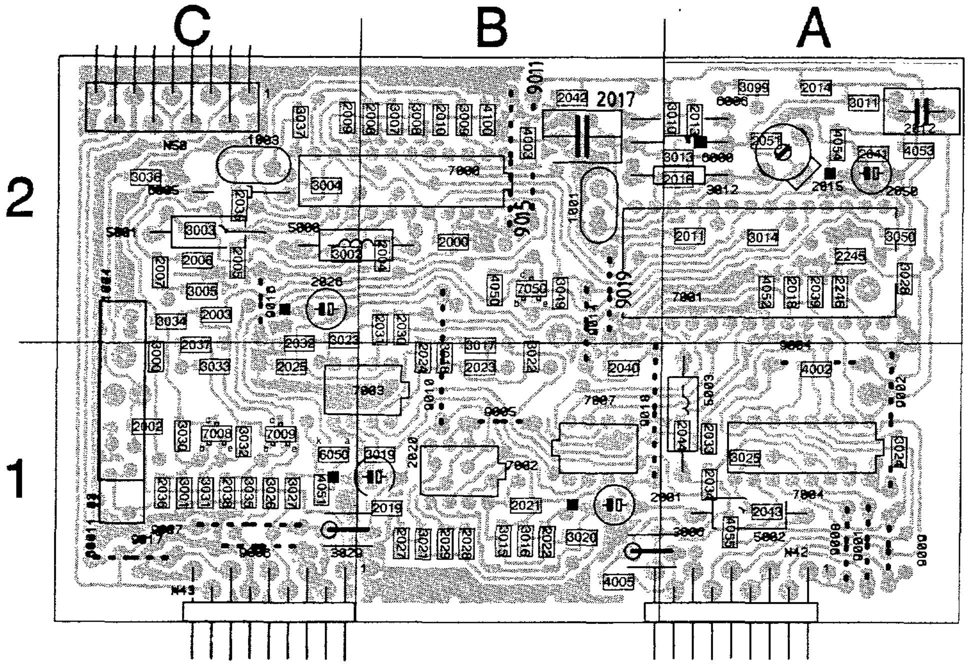
| 1003 | C12 |
| 1004 | B 3 |
| 2000 | B 7 |
| 2002 | C 2 |
| 2003 | C 6 |
| 2004 | B10 |
| 2005 | B 9 |
| 2006 | D11 |
| 2007 | C11 |
| 2008 | G 6 |
| 2009 | B 7 |
| 2010 | G 7 |
| 2011 | F11 |
| 2012 | G 9 |
| 2013 | F10 |
| 2014 | G 8 |
| 2015 | G10 |
| 2016 | G10 |
| 2017 | G16 |
| 2018 | B16 |
| 2019 | O11 |
| 2020 | O10 |
| 2021 | M11 |
| 2022 | L11 |
| 2023 | I11 |
| 2024 | I11 |
| 2025 | L11 |
| 2026 | L10 |
| 2027 | M12 |
| 2028 | L12 |
| 2029 | L13 |
| 2030 | I13 |
| 2031 | I12 |
| 2032 | J12 |
| 2033 | N14 |
| 2034 | K14 |
| 2035 | D12 |
| 2036 | C 4 |
| 2037 | C 5 |
| 2038 | D 5 |
| 2039 | D12 |
| 2040 | J 8 |
| 2041 | D12 |
| 2042 | G 8 |
| 2043 | N16 |
| 2050 | I 3 |
| 2051 | B17 |
| 2245 | G15 |
| 2246 | D17 |
| 3000 | C 2 |
| 3001 | D 4 |
| 3002 | B 8 |
| 3003 | B 8 |
| 3004 | C11 |
| 3005 | D11 |
| 3006 | H 2 |
| 3007 | G 6 |
| 3008 | G 7 |
| 3009 | E 6 |
| 3010 | F 9 |
| 3011 | G 9 |
| 3012 | G11 |
| 3013 | G16 |
| 3014 | F15 |
| 3015 | M11 |
| 3016 | L10 |
| 3017 | I10 |
| 3018 | J11 |
| 3019 | O10 |
| 3020 | L12 |
| 3021 | L12 |
| 3022 | I12 |
| 3023 | I12 |
| 3024 | N14 |
| 3025 | K14 |
| 3026 | A15 |
| 3027 | A14 |
| 3028 | C13 |
| 3029 | J 2 |
| 3030 | C 4 |
| 3031 | D 5 |
| 3032 | C 5 |
| 3033 | C 6 |
| 3034 | C 6 |
| 3035 | D 6 |
| 3036 | D 1 |
| 3037 | C11 |
| 3049 | B15 |
| 3050 | B13 |
| 4005 | H 2 |
| 4050 | B16 |
| 4051 | B14 |
| 4100 | E 6 |
| 5000 | B 9 |
| 5001 | B 9 |
| 5002 | H 3 |
| 5003 | H 3 |
| 6000 | G16 |
| 6005 | B11 |
| 6006 | G 9 |
| 6050 | B14 |
| 7000 | C 7 |
| 7001 | C13 |
| 7002 | M13 |
| 7003 | J13 |
| 7004 | K15 |
| 7007 | K 7 |
| 7008 | D 5 |
| 7009 | D 6 |
| 7050 | B15 |


A
B
C
2
1
2012
2015
2050
6006
6000
9012
2017
9016
1003
N50
6005
5001
7001
9011
7000
5000
2026
9010
9013
9014
9004
9002
7004
5003
9018
7007
9005
9015
7003
1004
7002
2028
2001
5002
9006
9007
9008
9017
3029
N42
N43
9003
9001
9009

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N42 | A1 | 2010 | B2 | 2026 | C2 | 2042 | B2 | 3009 | B2 | 3024 | A1 | 3099 | A2 | 6000 | A2 | 9004 | A1 |
| N43 | C1 | 2011 | A2 | 2027 | B1 | 2043 | A1 | 3009 | B2 | 3025 | A1 | 4002 | A1 | 6001 | C1 | 9005 | B1 |
| N50 | C2 | 2012 | A2 | 2028 | B1 | 2044 | A1 | 3010 | A2 | 3026 | C1 | 4003 | B2 | 6005 | C2 | 9006 | C1 |
| 1001 | B2 | 2013 | A2 | 2029 | B1 | 2050 | A2 | 3011 | A2 | 3027 | C1 | 4005 | B1 | 6006 | A2 | 9007 | C1 |
| 1003 | C2 | 2014 | A2 | 2030 | B2 | 2051 | A2 | 3012 | A2 | 3028 | A2 | 4050 | B2 | 6050 | C1 | 9008 | A1 |
| 1004 | C1 | 2015 | A2 | 2031 | B2 | 2245 | A2 | 3013 | A2 | 3029 | C1 | 4051 | C1 | 7000 | B2 | 9009 | A1 |
| 2000 | B2 | 2016 | A2 | 2032 | C2 | 2246 | A2 | 3014 | A2 | 3030 | C1 | 4052 | A2 | 7001 | A2 | 9010 | B1 |
| 2001 | B1 | 2017 | B2 | 2033 | A1 | 3000 | C1 | 3015 | B1 | 3031 | C1 | 4053 | A2 | 7002 | B1 | 9011 | B2 |
| 2002 | C1 | 2018 | A2 | 2034 | A1 | 3001 | C1 | 3016 | B1 | 3032 | C1 | 4054 | A2 | 7003 | B1 | 9014 | B2 |
| 2003 | C2 | 2019 | B1 | 2035 | C2 | 3002 | C2 | 3017 | B1 | 3033 | C1 | 4055 | A1 | 7004 | A1 | 9015 | B2 |
| 2004 | B2 | 2020 | B1 | 2036 | C1 | 3003 | C2 | 3018 | B1 | 3034 | C2 | 4100 | B2 | 7007 | B1 | 9016 | C2 |
| 2005 | C2 | 2021 | B1 | 2037 | C1 | 3004 | C2 | 3019 | B1 | 3035 | C1 | 4100 | B2 | 7008 | C1 | 9017 | C1 |
| 2006 | C2 | 2022 | B1 | 2038 | C1 | 3005 | C2 | 3020 | B1 | 3036 | C2 | 5000 | C2 | 7009 | C1 | 9018 | B1 |
| 2007 | C2 | 2023 | B1 | 2039 | A2 | 3006 | B1 | 3021 | B1 | 3037 | C2 | 5001 | C2 | 7050 | B2 | 9019 | B2 |
| 2008 | B2 | 2024 | B1 | 2040 | B1 | 3007 | B2 | 3022 | B1 | 3049 | B2 | 5002 | A1 | 9001 | A1 |  |  |
| 2009 | C2 | 2025 | C1 | 2041 | A2 | 3008 | B2 | 3023 | C2 | 3050 | A2 | 5003 | A1 | 9002 | A1 |  |  |

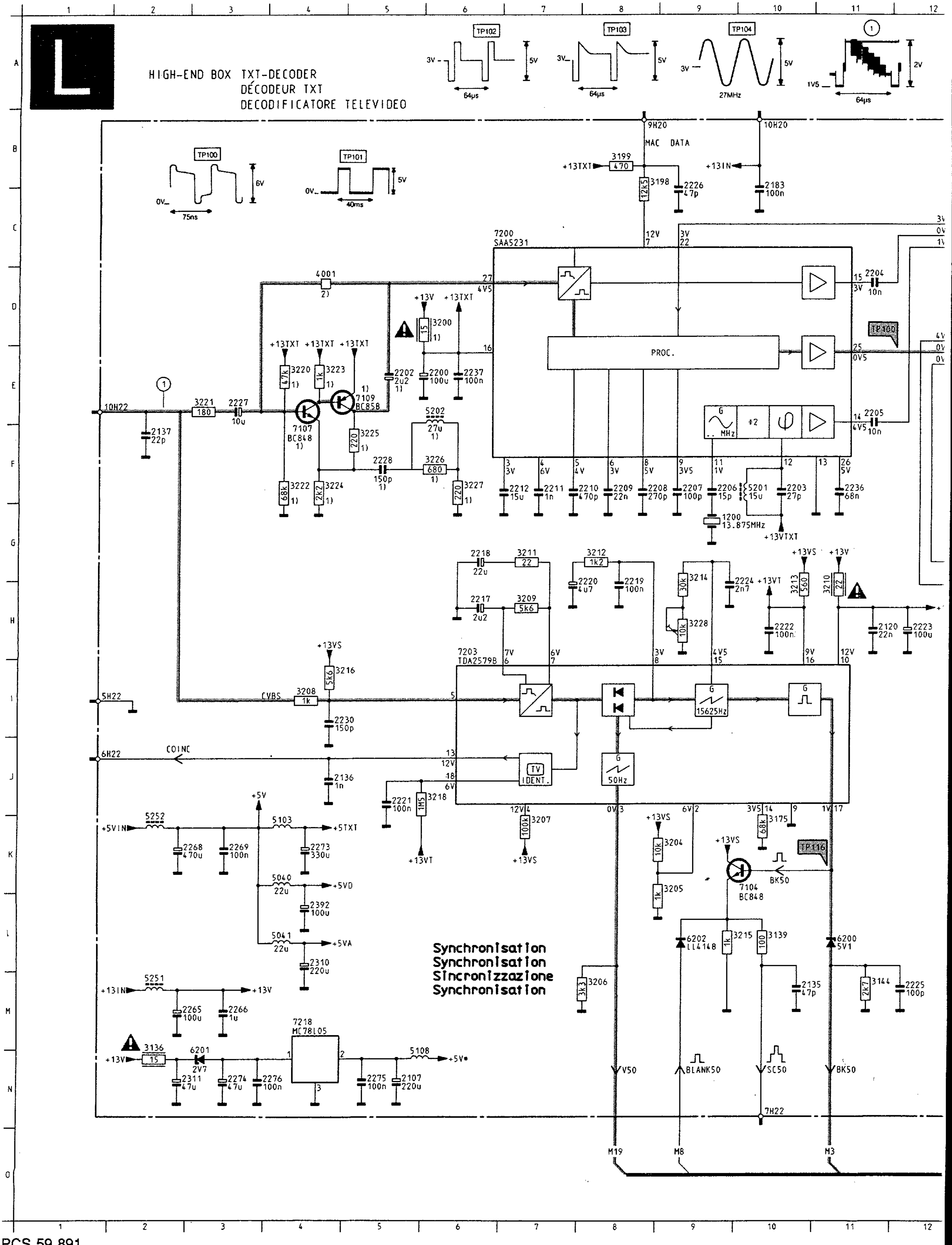
# NICAM



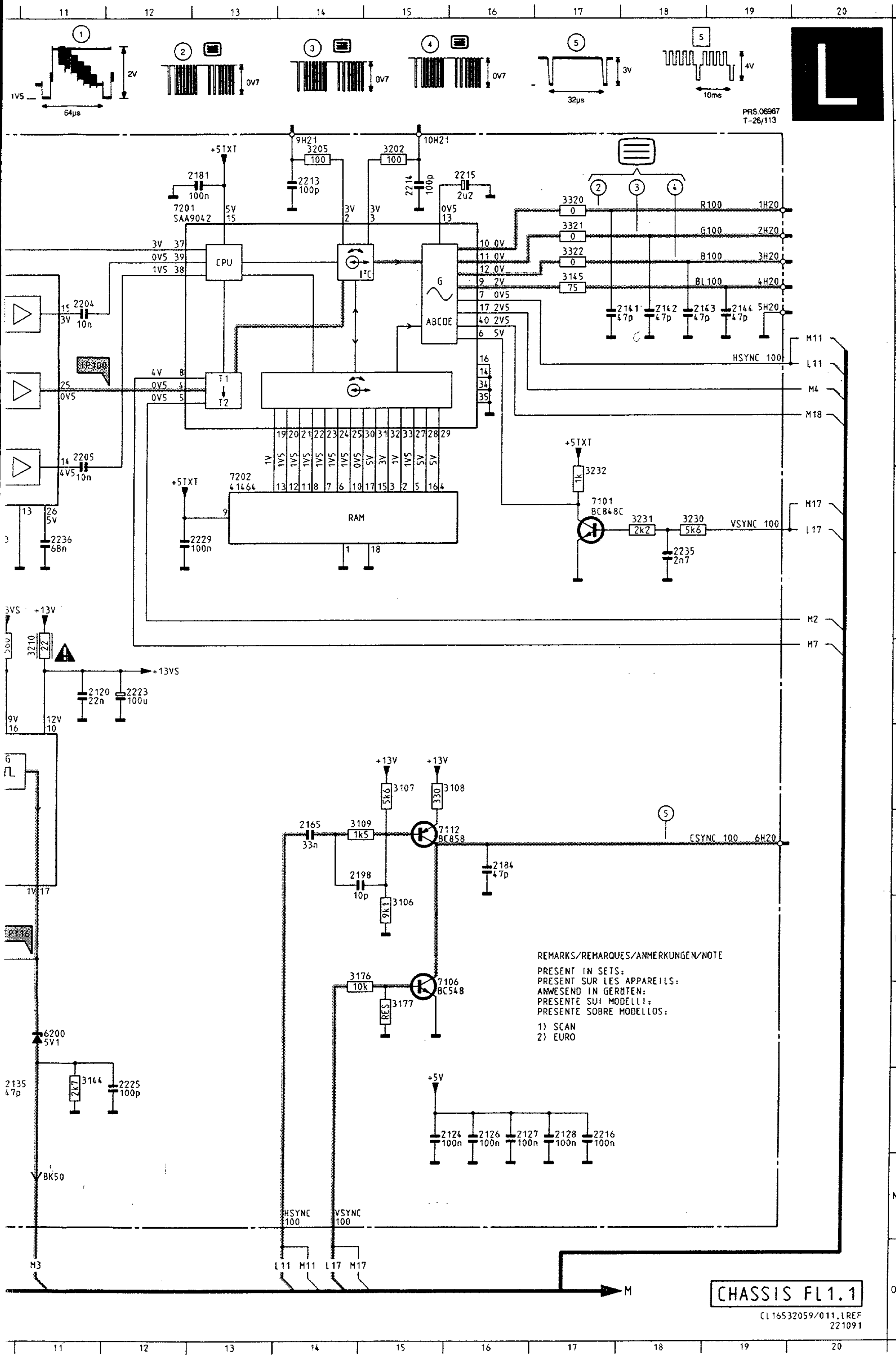
| | |
|---|---|
| N42 | A1 |
| N43 | C1 |
| N50 | C2 |
| 1001 | B2 |
| 1003 | C2 |
| 1004 | C1 |
| 2000 | B2 |
| 2001 | B1 |
| *2002* | *C1* |
| 2003 | C2 |
| 2004 | B2 |
| 2005 | C2 |
| 2006 | C2 |
| 2007 | C2 |
| 2008 | B2 |
| 2009 | C2 |
| 2010 | B2 |
| 2011 | A2 |
| 2012 | A2 |
| 2013 | A2 |
| 2014 | A2 |
| 2015 | A2 |
| 2016 | A2 |
| 2017 | B2 |
| *2018* | *A2* |
| 2019 | B1 |
| 2020 | B1 |
| 2021 | B1 |
| 2022 | B1 |
| 2023 | B1 |
| 2024 | B1 |
| 2025 | C1 |
| 2026 | C2 |
| 2027 | B1 |
| 2028 | B1 |
| 2029 | B1 |
| 2030 | B2 |
| 2031 | B2 |
| 2032 | C2 |
| 2033 | A1 |
| *2034* | *A1* |
| 2035 | C2 |
| 2036 | C1 |
| 2037 | C1 |
| 2038 | C1 |
| 2039 | A2 |
| 2040 | B1 |
| 2041 | A2 |
| 2042 | B2 |
| 2043 | A1 |
| 2044 | A1 |
| 2050 | A2 |
| 2051 | A2 |
| 2245 | A2 |
| 2246 | A2 |
| 3000 | C1 |
| *3001* | *C1* |
| 3002 | C2 |
| 3003 | C2 |
| 3004 | C2 |
| 3005 | C2 |
| 3006 | B1 |
| 3007 | B2 |
| 3008 | B2 |
| 3009 | B2 |
| 3009 | B2 |
| 3010 | A2 |
| 3011 | A2 |
| 3012 | A2 |
| 3013 | A2 |
| 3014 | A2 |
| 3015 | B1 |
| *3016* | *B1* |
| 3017 | B1 |
| 3018 | B1 |
| 3019 | B1 |
| 3020 | B1 |
| 3021 | B1 |
| 3022 | B1 |
| 3023 | C2 |
| 3024 | A1 |
| 3025 | A1 |
| 3026 | C1 |
| 3027 | C1 |
| 3028 | A2 |
| 3029 | C1 |
| 3030 | C1 |
| 3031 | C1 |
| *3032* | *C1* |
| 3033 | C1 |
| 3034 | C2 |
| 3035 | C1 |
| 3036 | C2 |
| 3037 | C2 |
| 3049 | B2 |
| 3050 | A2 |
| 3099 | A2 |
| 4002 | A1 |
| 4003 | B2 |
| 4005 | B1 |
| 4050 | B2 |
| 4051 | C1 |
| 4052 | A2 |
| 4053 | A2 |
| 4054 | A2 |
| 4055 | A1 |
| 4100 | B2 |
| 4100 | B2 |
| 5000 | C2 |
| 5001 | C2 |
| 5002 | A1 |
| 5003 | A1 |
| 6000 | A2 |
| 6001 | C1 |
| 6005 | C2 |
| 6006 | A2 |
| 6050 | C1 |
| 7000 | B2 |
| 7001 | A2 |
| 7002 | B1 |
| 7003 | B1 |
| 7004 | A1 |
| 7007 | B1 |
| 7008 | C1 |
| 7009 | C1 |
| 7050 | B2 |
| 9001 | A1 |
| 9002 | A1 |
| 9004 | A1 |
| 9005 | B1 |
| 9006 | C1 |
| 9007 | C1 |
| 9008 | A1 |
| 9009 | A1 |
| 9010 | B1 |
| 9011 | B2 |
| 9014 | B2 |
| 9015 | B2 |
| 9016 | C2 |
| 9017 | C1 |
| 9018 | B1 |
| 9019 | B2 |

**L**

### HIGH-END BOX TXT-DECODER
### DÉCODEUR TXT
### DECODIFICATORE TELEVIDEO


TP100
TP101
TP102
TP103
TP104
①
6V
0V
75ns
5V
40ms
3V
64µs
27MHz
2V
1V5
9H20
MAC DATA
10H20
+13TXT
3199 470
3198 12k5
2226 47p
+13IN
2183 100n
7200 SAA5231
12V 7
3V 22
4001 2)
27 4V5
+13V
+13TXT
3200 15 1)
16
2200 100u
2237 100n
2202 2u2 1)
PROC.
15 3V
2204 10n
25 0V5
14 4V5
2205 10n
G MHz
÷2
10H22
3221 180
2227 10u
2137 22p
3220 4k7 1)
3223 1k 1)
7109 BC858 1)
7107 BC848 1)
3225 220 1)
5202 27u 1)
2228 150p 1)
3226 680 1)
3222 68k 1)
3224 2k2 1)
3227 220 1)
3 3V
4 6V
5 4V
6 3V
8 5V
9 3V5
11 1V
12
13
26 5V
2212 15u
2211 1n
2210 470p
2209 22n
2208 270p
2207 100p
2206 15p
5201 15u
2203 27p
2236 68n
1200 13.875MHz
+13VTXT
2218 22u
3211 22
3212 1k2
2220 4u7
2219 100n
3214 30k
2224 2n7
+13VT
+13VS
3213 560
+13V
3210 22
2217 2u2
3209 5k6
3228 10k
2222 100n
2120 22n
2223 100u
7203 TDA2579B
7V 6
6V 7
3V 8
4V5 15
9V 16
12V 10
5H22
+13VS
3216 5k6
CVBS
3208 1k
5
15625Hz
2230 150p
6H22
COINC
13 12V
18 6V
TV IDENT.
50Hz
2136 1n
2221 100n
3218 1M5
+13VT
12V 4
3207 100k
+13VS
0V 3
6V 2
3V5 14
9
1V 17
3175 68k
3204 10k
3205 1k
TP116
7104 BC848
BK50
6202 LL4148
3215 1k
3139 100
6200 5V1
3206 3k3
2135 47p
3144 2k7
2225 100p
+5V
+5VIN
5252
2268 470u
2269 100n
5103
+5TXT
2273 330u
5040 22u
+5VD
2392 100u
5041 22u
+5VA
2310 220u
+13IN
5251
+13V
2265 100u
2266 1u
3136 15
+13V
6201 2V7
2311 47u
2274 47u
2276 100n
7218 MC78L05
1
2
3
2275 100n
2107 220u
5108
+5V*
V50
BLANK50
SC50
BK50
7H22
M19
M8
M3
3V
0V
1V
4V
0V
0V
1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I J K L M N O

**Synchronisation**
**Synchronisation**
**Sincronizzazione**
**Synchronisation**



L
① 2V 1V5 64μs
② 0V7
③ 0V7
④ 0V7
⑤ 3V 32μs
5 4V 10ms
PRS.06967
T-26/113
9H21
10H21
+5TXT
3205 100
3202 100
2181 100n
2213 100p
2214 100p
2215 2u2
7201
SAA9042
CPU
I²C
G
ABCDE
T1
T2
3V 37
0V5 39
1V5 38
5V 15
3V 2
3V 3
0V5 13
10 0V
11 0V
12 0V
9 2V
7 0V5
17 2V5
40 2V5
6 5V
3320 0
3321 0
3322 0
3145 75
R100 1H20
G100 2H20
B100 3H20
BL100 4H20
5H20
2141 47p
2142 47p
2143 47p
2144 47p
HSYNC 100
M11
L11
M4
M18
M17
L17
M2
M7
M3
15 2204 3V 10n
25 0V5
14 2205 4V5 10n
TP100
4V 8
0V5 4
0V5 5
16 14 34 35
19 20 21 22 23 24 25 30 31 32 33 27 28 29
1V 1V5 1V5 1V5 1V5 1V5 0V5 5V 3V 1V 1V5 5V 5V
7202
41464
RAM
13 12 11 8 7 6 10 17 15 3 2 5 16 4
9 1 18
2229 100n
13 26 5V
2236 68n
3232 1k
7101 BC848C
3231 2k2
3230 5k6
VSYNC 100
2235 2n7
3VS +13V
3210 22
+13VS
2120 22n
2223 100u
9V 16
12V 10
1V 17
P116
6200 5V1
2135 47p
3144 2k7
2225 100p
BK50
+13V
3107 5k6
3108 330
2165 33n
3109 1k5
7112 BC858
2198 10p
3106 9k1
2184 47p
⑤
CSYNC 100 6H20
3176 10k
7106 BC548
3177 RES
+5V
2124 100n
2126 100n
2127 100n
2128 100n
2216 100n
HSYNC 100
VSYNC 100
L11 M11 L17 M17
M
11 12 13 14 15 16 17 18 19 20
A B C D E F G H I J K L M N O

REMARKS/REMARQUES/ANMERKUNGEN/NOTE

PRESENT IN SETS:
PRESENT SUR LES APPAREILS:
ANWESEND IN GERÄTEN:
PRESENTE SUI MODELLI:
PRESENTE SOBRE MODELLOS:

1) SCAN
2) EURO

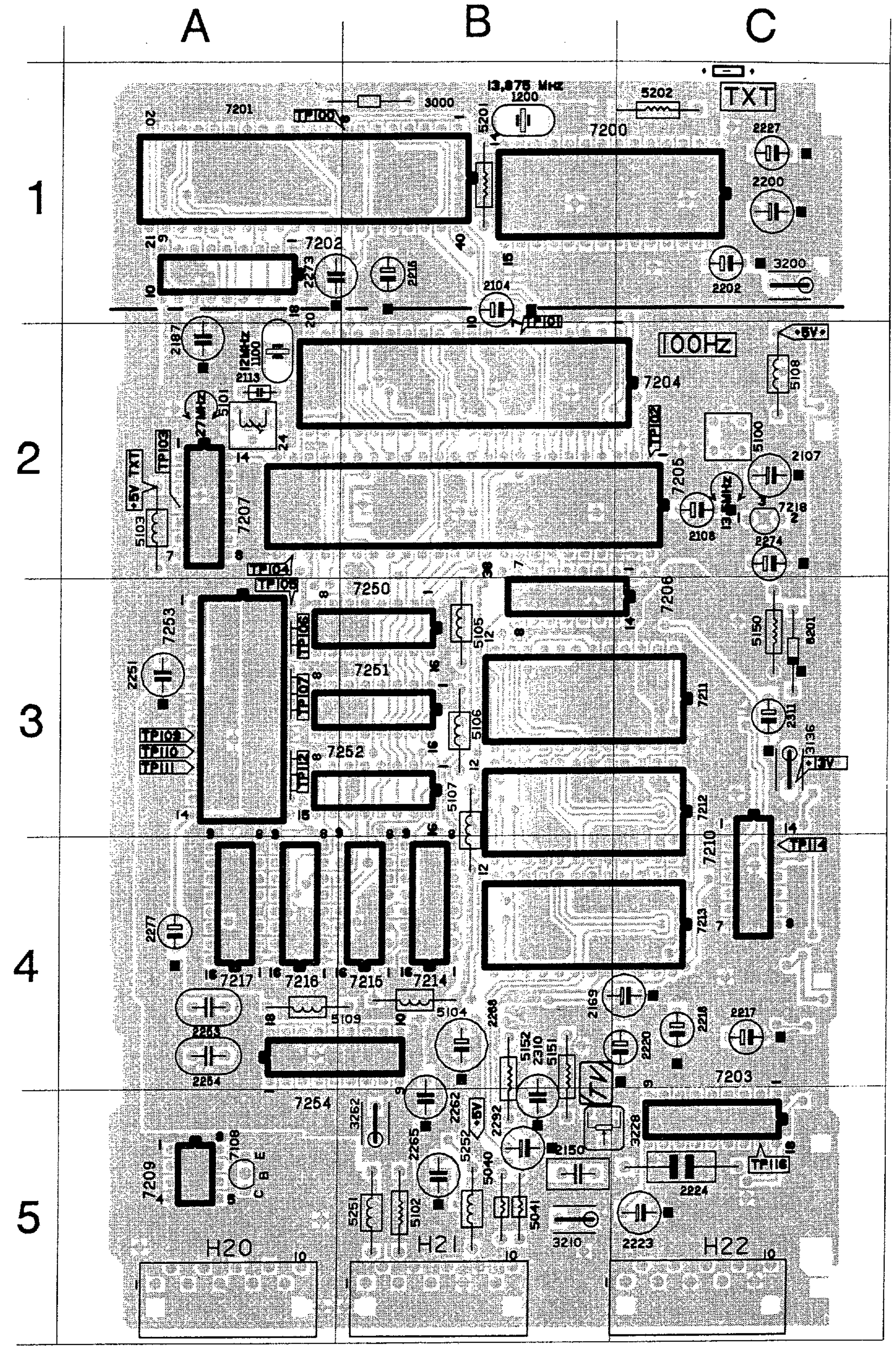
CHASSIS FL1.1

CL 16532059/011.LREF
221091

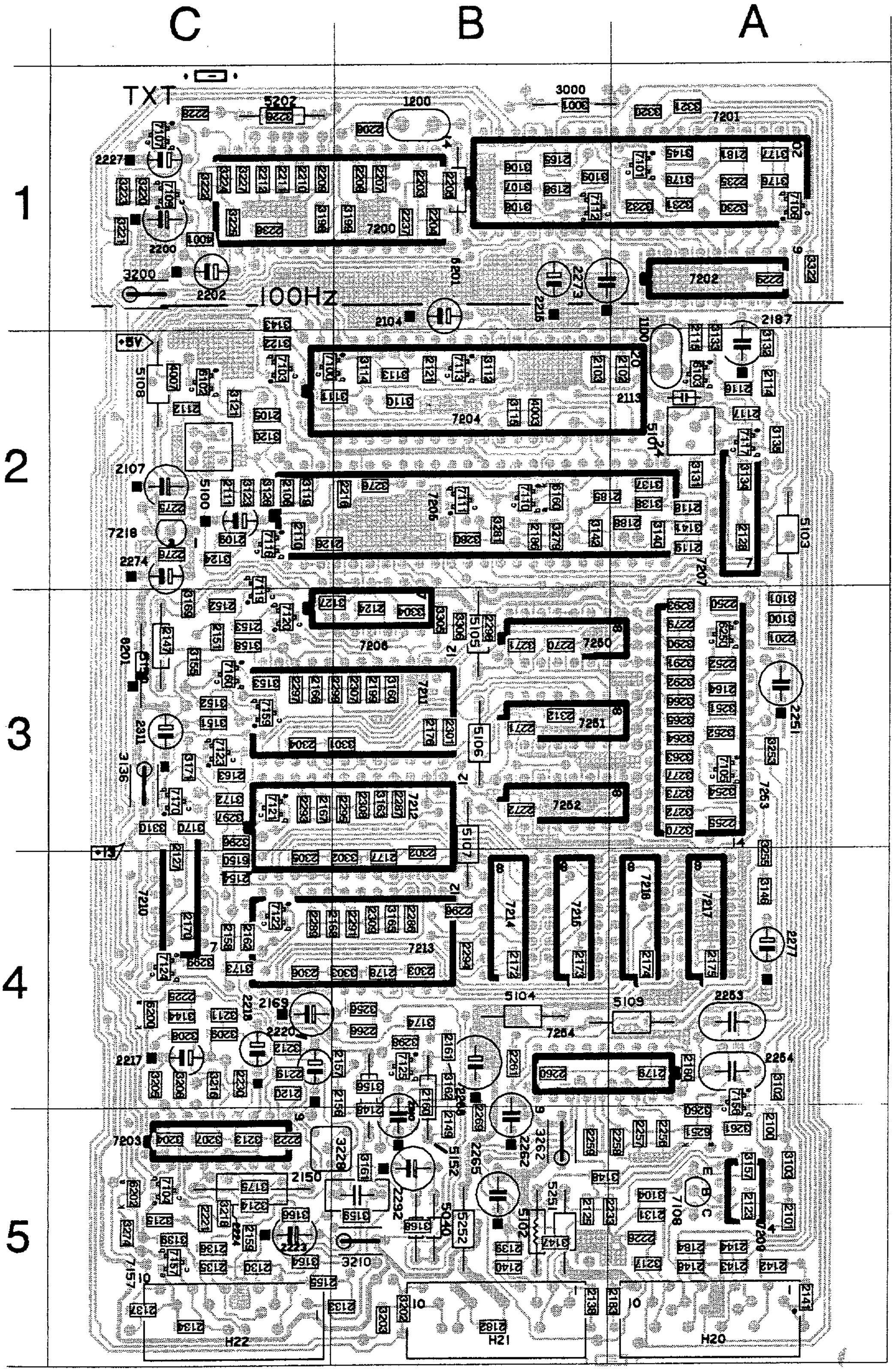
| | |
|---|---|
| 1200 | G 9 |
| 2107 | N 5 |
| 2120 | H11 |
| 2124 | M15 |
| 2126 | M16 |
| 2127 | M16 |
| 2128 | M17 |
| 2135 | M10 |
| 2136 | J 4 |
| 2137 | F 2 |
| 2141 | D17 |
| 2142 | D18 |
| 2143 | D18 |
| 2144 | D19 |
| 2165 | J14 |
| 2181 | B13 |
| 2183 | C10 |
| 2184 | J16 |
| 2198 | J14 |
| 2200 | E 6 |
| 2202 | E 5 |
| 2203 | F10 |
| 2204 | D11 |
| 2205 | E11 |
| 2206 | F 9 |
| 2207 | F 9 |
| 2208 | F 8 |
| 2209 | F 8 |
| 2210 | F 7 |
| 2211 | F 7 |
| 2212 | F 7 |
| 2213 | B14 |
| 2214 | B15 |
| 2215 | B16 |
| 2216 | M17 |
| 2217 | H 6 |
| 2218 | G 6 |
| 2219 | H 8 |
| 2220 | H 7 |
| 2221 | J 5 |
| 2222 | H10 |
| 2223 | H12 |
| 2224 | H 9 |
| 2225 | M12 |
| 2226 | C 9 |
| 2227 | E 3 |
| 2228 | F 5 |
| 2229 | F12 |
| 2230 | I 4 |
| 2235 | G18 |
| 2236 | F11 |
| 2237 | E 6 |
| 2265 | M 2 |
| 2266 | M 3 |
| 2268 | K 2 |
| 2269 | K 3 |
| 2273 | K 4 |
| 2274 | N 3 |
| 2275 | N 5 |
| 2276 | N 3 |
| 2310 | L 4 |
| 2311 | N 2 |
| 2392 | L 4 |
| 3106 | K15 |
| 3107 | I15 |
| 3108 | I15 |
| 3109 | J14 |
| 3136 | N 2 |
| 3139 | L10 |
| 3144 | M11 |
| 3145 | C17 |
| 3175 | K10 |
| 3176 | K14 |
| 3177 | L15 |
| 3198 | B 8 |
| 3199 | B 8 |
| 3200 | D 6 |
| 3202 | B15 |
| 3204 | K 9 |
| 3205 | B14 |
| 3205 | K 9 |
| 3206 | M 8 |
| 3207 | K 7 |
| 3208 | I 4 |
| 3209 | H 7 |
| 3210 | H11 |
| 3211 | G 7 |
| 3212 | G 8 |
| 3213 | H10 |
| 3214 | G 9 |
| 3215 | L 9 |
| 3216 | I 4 |
| 3218 | J 6 |
| 3220 | E 4 |
| 3221 | E 3 |
| 3222 | F 4 |
| 3223 | E 4 |
| 3224 | F 4 |
| 3225 | F 5 |
| 3226 | F 6 |
| 3227 | F 6 |
| 3228 | H 9 |
| 3230 | F18 |
| 3231 | F18 |
| 3232 | E17 |
| 3320 | B17 |
| 3321 | C17 |
| 3322 | C17 |
| 4001 | D 4 |
| 5040 | K 4 |
| 5041 | L 4 |
| 5103 | K 4 |
| 5201 | F10 |
| 5202 | E 6 |
| 5251 | M 2 |
| 5252 | K 2 |
| 6200 | L11 |
| 6201 | N 3 |
| 6202 | L 9 |
| 7101 | F17 |
| 7104 | K10 |
| 7106 | L15 |
| 7107 | F 4 |
| 7109 | E 5 |
| 7112 | J15 |
| 7200 | C 6 |
| 7201 | C12 |
| 7202 | F13 |
| 7203 | H 6 |
| 7218 | M 4 |

# High-end box

| | |
|---|---|
| 1200 | B1 |
| 2104 | B1 |
| 2107 | C2 |
| 2108 | C2 |
| 2113 | A2 |
| 2150 | C5 |
| 2169 | C4 |
| 2187 | A2 |
| 2200 | C1 |
| 2202 | C1 |
| 2215 | B1 |
| 2217 | C4 |
| 2218 | C4 |
| 2220 | C4 |
| 2223 | C5 |
| 2224 | C5 |
| 2227 | C1 |
| 2251 | A3 |
| 2253 | A4 |
| 2254 | A4 |
| 2262 | B5 |
| 2265 | B5 |
| 2268 | B4 |
| 2273 | B1 |
| 2274 | C2 |
| 2277 | A4 |
| 2292 | B5 |
| 2310 | B5 |
| 2311 | C3 |
| 3000 | B1 |
| 3136 | C3 |
| 3200 | C1 |
| 3210 | B5 |
| 3228 | C5 |
| 3262 | B5 |
| 5040 | B5 |
| 5041 | B5 |
| 5100 | C2 |
| 5101 | A2 |
| 5102 | B5 |
| 5103 | A2 |
| 5104 | B4 |
| 5105 | B3 |
| 5106 | B3 |
| 5107 | B3 |
| 5108 | C2 |
| 5109 | B4 |
| 5150 | C3 |
| 5151 | B4 |
| 5152 | B4 |
| 5201 | B1 |
| 5202 | C1 |
| 5251 | B5 |
| 5252 | B5 |
| 6201 | C3 |
| 7108 | A5 |
| 7200 | C1 |
| 7201 | B1 |
| 7202 | A1 |
| 7203 | C5 |
| 7204 | C2 |
| 7205 | C2 |
| 7206 | C2 |
| 7207 | A2 |
| 7209 | A5 |
| 7210 | C3 |
| 7211 | C3 |
| 7212 | C3 |
| 7213 | C4 |
| 7214 | B4 |
| 7215 | B4 |
| 7216 | B4 |
| 7217 | A4 |
| 7218 | C2 |
| 7250 | B3 |
| 7251 | B3 |
| 7252 | B3 |
| 7253 | A3 |
| 7254 | A4 |
| H20 | A5 |
| H21 | B5 |
| H22 | C5 |


A
B
C
1
2
3
4
5
13,875 MHz
1200
3000
TP100
7201
5201
5202
TXT
7200
2227
2200
2202
3200
7202
2273
2215
2104
TP101
2187
12MHz
1100
2113
27MHz
5101
100Hz
7204
5108
+5V
TP102
TP103
+5V TXT
5103
7207
7205
5100
2107
13.5MHz
2108
7218
2274
TP104
TP105
7250
TP106
5105
7206
5150
6201
7253
2251
7251
TP107
5106
7211
2311
3136
+5V
TP109
TP110
TP111
TP112
7252
5107
7212
7210
TP114
2277
7213
7217
7216
7215
7214
2253
5109
5104
2268
2169
2218
2217
2254
7254
5152
2310
5151
2220
7203
3262
2262
+5V
2292
3228
TP116
7209
7108
C B E
2265
5252
5040
2150
2224
5251
5102
5041
3210
2223
H20
H21
H22

# High-end box



| | |
|---|---|
| H20 | A5 |
| H21 | B5 |
| H22 | C5 |
| 1200 | B1 |
| 2100 | A5 |
| 2101 | A5 |
| 2102 | B2 |
| 2103 | B2 |
| 2104 | B1 |
| 2105 | C2 |
| 2106 | C2 |
| 2107 | C2 |
| 2108 | C2 |
| 2109 | C2 |
| 2110 | C2 |
| 2111 | C2 |
| 2112 | C2 |
| 2113 | A2 |
| 2114 | A2 |
| 2115 | A2 |
| 2116 | A2 |
| 2117 | A2 |
| 2118 | A2 |
| 2119 | A2 |
| 2120 | C4 |
| 2121 | B2 |
| 2123 | A5 |
| 2124 | B3 |
| 2125 | B5 |
| 2126 | C2 |
| 2127 | C3 |
| 2128 | A2 |
| 2130 | C5 |
| 2131 | A5 |
| 2133 | C5 |
| 2134 | C5 |
| 2135 | C5 |
| 2136 | C5 |
| 2137 | C5 |
| 2138 | B5 |
| 2139 | B5 |
| 2140 | B5 |
| 2141 | A5 |
| 2142 | A5 |
| 2143 | A5 |
| 2144 | A5 |
| 2146 | A5 |
| 2147 | C3 |
| 2148 | B4 |
| 2149 | B5 |
| 2150 | C5 |
| 2151 | C3 |
| 2152 | C3 |
| 2153 | C3 |
| 2154 | C4 |
| 2155 | C5 |
| 2156 | C4 |
| 2157 | C4 |
| 2158 | C4 |
| 2159 | C5 |
| 2160 | B4 |
| 2161 | B4 |
| 2162 | C4 |
| 2163 | C3 |
| 2164 | A3 |
| 2165 | B1 |
| 2166 | C3 |
| 2167 | C3 |
| 2168 | C4 |
| 2169 | C4 |
| 2170 | C4 |
| 2172 | B4 |
| 2173 | B4 |
| 2174 | A4 |
| 2175 | A4 |
| 2176 | B3 |
| 2177 | B4 |
| 2178 | B4 |
| 2179 | A4 |
| 2180 | A4 |
| 2181 | A1 |
| 2182 | B5 |
| 2183 | B5 |
| 2184 | A5 |
| 2185 | B2 |
| 2186 | B2 |
| 2187 | A2 |
| 2188 | B2 |
| 2198 | B1 |
| 2199 | B3 |
| 2200 | C1 |
| 2201 | A3 |
| 2202 | C1 |
| 2203 | B1 |
| 2204 | B1 |
| 2205 | B1 |
| 2206 | B1 |
| 2207 | B1 |
| 2208 | C1 |
| 2209 | C1 |
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| 2211 | C1 |
| 2212 | C1 |
| 2215 | B1 |
| 2216 | C2 |
| 2217 | C4 |
| 2218 | C4 |
| 2219 | C4 |
| 2220 | C4 |
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| 2222 | C5 |
| 2223 | C5 |
| 2224 | C5 |
| 2225 | C4 |
| 2226 | A5 |
| 2227 | C1 |
| 2228 | C1 |
| 2229 | A1 |
| 2230 | C4 |
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| 2235 | A1 |
| 2236 | C1 |
| 2237 | B1 |
| 2250 | A3 |
| 2251 | A3 |
| 2252 | A3 |
| 2253 | A4 |
| 2254 | A4 |
| 2255 | A3 |
| 2256 | A5 |
| 2257 | A5 |
| 2258 | B5 |
| 2259 | B5 |
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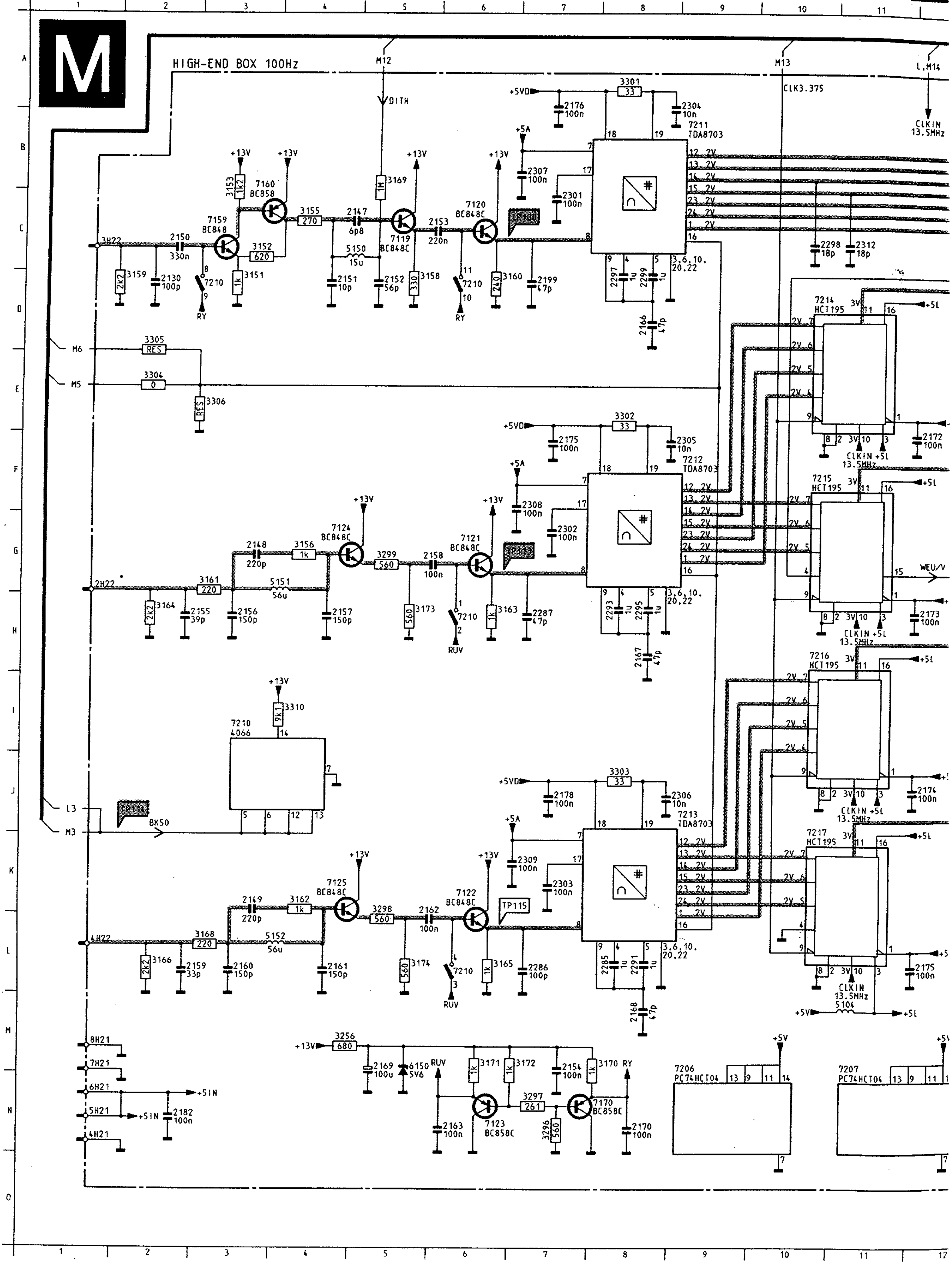
| 2262 | B5 |
| 2265 | B5 |
| 2266 | B4 |
| 2268 | B4 |
| 2269 | B5 |
| 2270 | B3 |
| 2271 | B3 |
| 2272 | B3 |
| 2273 | B1 |
| 2274 | C2 |
| 2275 | C2 |
| 2276 | C2 |
| 2277 | A4 |
| 2279 | A3 |
| 2286 | B4 |
| 2287 | B3 |
| 2289 | C4 |
| 2291 | C4 |
| 2292 | B5 |
| 2293 | C3 |
| 2294 | B4 |
| 2295 | C3 |
| 2296 | B4 |
| 2297 | C3 |
| 2298 | B3 |
| 2299 | C3 |
| 2301 | B3 |
| 2302 | B3 |
| 2303 | B4 |
| 2304 | C3 |
| 2305 | C4 |
| 2306 | C4 |
| 2307 | C3 |
| 2308 | B3 |
| 2309 | B4 |
| 2310 | B5 |
| 2311 | C3 |
| 2312 | B3 |
| 3000 | B1 |
| 3001 | B1 |
| 3100 | A3 |
| 3101 | A3 |
| 3102 | A4 |
| 3103 | A5 |
| 3104 | A5 |
| 3106 | B1 |
| 3107 | B1 |
| 3108 | B1 |
| 3109 | B1 |
| 3110 | B2 |
| 3111 | C2 |
| 3112 | B2 |
| 3113 | B2 |
| 3114 | B2 |
| 3115 | B2 |
| 3119 | C2 |
| 3120 | C2 |
| 3121 | C2 |
| 3122 | C2 |
| 3123 | C2 |
| 3124 | C2 |
| 3126 | C2 |
| 3127 | C3 |
| 3131 | A2 |
| 3132 | A2 |
| 3133 | A2 |
| 3134 | A2 |
| 3135 | A2 |
| 3136 | C3 |
| 3137 | A2 |
| 3138 | A2 |
| 3139 | C5 |
| 3140 | A2 |
| 3141 | A2 |
| 3142 | B2 |
| 3143 | C1 |
| 3144 | C4 |
| 3145 | A1 |
| 3146 | A4 |
| 3147 | B5 |
| 3148 | B5 |
| 3151 | C3 |
| 3152 | C3 |
| 3153 | C3 |
| 3155 | C3 |
| 3156 | B4 |
| 3157 | A5 |
| 3158 | C3 |
| 3159 | C5 |
| 3160 | B3 |
| 3161 | B5 |
| 3162 | B4 |
| 3163 | B3 |
| 3164 | C5 |
| 3165 | B4 |
| 3166 | C5 |
| 3168 | B5 |
| 3169 | C3 |
| 3170 | C3 |
| 3171 | C3 |
| 3172 | C3 |
| 3173 | C4 |
| 3174 | B4 |
| 3175 | C5 |
| 3176 | A1 |
| 3177 | A1 |
| 3178 | A1 |
| 3198 | C1 |
| 3199 | C1 |
| 3200 | C1 |
| 3202 | B5 |
| 3203 | B5 |
| 3204 | C5 |
| 3205 | C4 |
| 3206 | C4 |
| 3207 | C5 |
| 3208 | C4 |
| 3209 | C4 |
| 3210 | B5 |
| 3211 | C4 |
| 3212 | C4 |
| 3213 | C5 |
| 3214 | C5 |
| 3215 | C5 |
| 3216 | C4 |
| 3217 | A5 |
| 3218 | C5 |
| 3220 | C1 |
| 3221 | C1 |
| 3222 | C1 |
| 3223 | C1 |
| 3224 | C1 |
| 3225 | C1 |
| 3226 | C1 |
| 3227 | C1 |
| 3228 | C5 |
| 3230 | A1 |
| 3231 | A1 |
| 3232 | B1 |
| 3251 | A3 |
| 3252 | A3 |
| 3253 | A3 |
| 3254 | A3 |
| 3255 | A3 |
| 3256 | B4 |
| 3260 | A4 |
| 3261 | A5 |
| 3262 | B5 |
| 3263 | A3 |
| 3264 | A3 |
| 3265 | A3 |
| 3266 | A3 |
| 3270 | A3 |
| 3271 | B3 |
| 3272 | A3 |
| 3273 | A3 |
| 3274 | C5 |
| 3276 | B2 |
| 3277 | A3 |
| 3279 | B2 |
| 3280 | B2 |
| 3281 | B2 |
| 3290 | A3 |
| 3291 | A3 |
| 3292 | A3 |
| 3293 | A3 |
| 3296 | C3 |
| 3297 | C3 |
| 3298 | B4 |
| 3299 | C4 |
| 3301 | C3 |
| 3302 | C4 |
| 3303 | C4 |
| 3304 | B3 |
| 3305 | B3 |
| 3306 | B3 |
| 3310 | C3 |
| 3320 | A1 |
| 3321 | A1 |
| 3322 | A1 |
| 4001 | C1 |
| 4003 | B2 |
| 4007 | C2 |
| 5040 | B5 |
| 5041 | B5 |
| 5100 | C2 |
| 5101 | A2 |
| 5102 | B5 |
| 5103 | A2 |
| 5104 | B4 |
| 5105 | B3 |
| 5106 | B3 |
| 5107 | B3 |
| 5108 | C2 |
| 5109 | B4 |
| 5150 | C3 |
| 5151 | B4 |
| 5152 | B4 |
| 5201 | B1 |
| 5202 | C1 |
| 5251 | B5 |
| 5252 | B5 |
| 6102 | C2 |
| 6103 | A2 |
| 6150 | C4 |
| 6160 | B2 |
| 6200 | C4 |
| 6201 | C3 |
| 6202 | C5 |
| 6250 | A3 |
| 6251 | A5 |
| 7100 | C2 |
| 7101 | B1 |
| 7103 | C2 |
| 7104 | C5 |
| 7105 | A3 |
| 7106 | A1 |
| 7107 | C1 |
| 7108 | A5 |
| 7109 | C1 |
| 7110 | B2 |
| 7111 | B2 |
| 7112 | B1 |
| 7113 | B2 |
| 7116 | C2 |
| 7117 | A2 |
| 7119 | C2 |
| 7120 | C3 |
| 7121 | C3 |
| 7122 | C4 |
| 7123 | C3 |
| 7124 | C4 |
| 7125 | B4 |
| 7156 | A4 |
| 7157 | C5 |
| 7159 | C3 |
| 7160 | C3 |
| 7170 | C3 |
| 7200 | C1 |
| 7201 | B1 |
| 7202 | A1 |
| 7203 | C5 |
| 7204 | C2 |
| 7205 | C2 |
| 7206 | C2 |
| 7207 | A2 |
| 7209 | A5 |
| 7210 | C3 |
| 7211 | C3 |
| 7212 | C3 |
| 7213 | C4 |
| 7214 | B4 |
| 7215 | B4 |
| 7216 | B4 |
| 7217 | A4 |
| 7218 | C2 |
| 7250 | B3 |
| 7251 | B3 |
| 7252 | B3 |
| 7253 | A3 |
| 7254 | A4 |

# High-end box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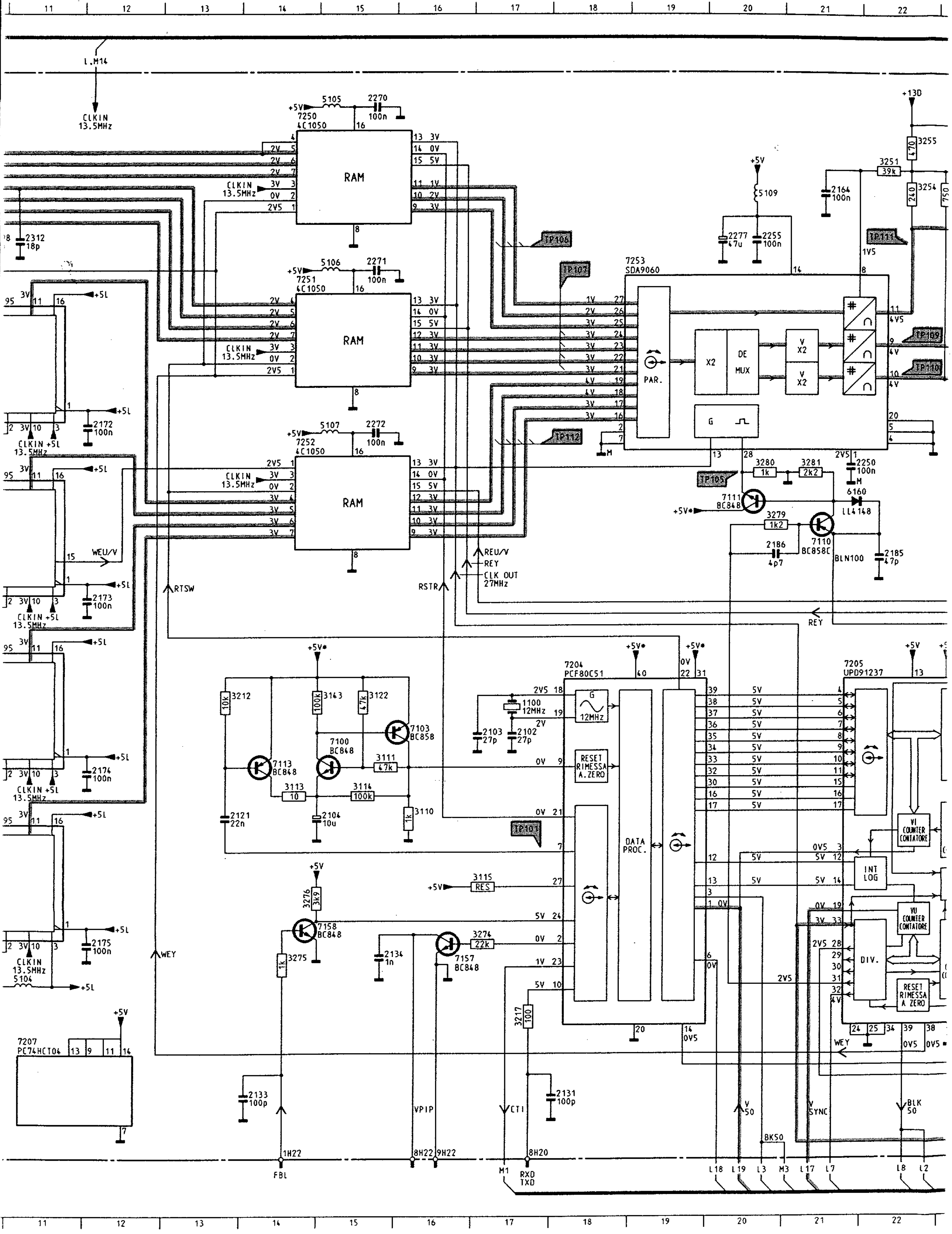
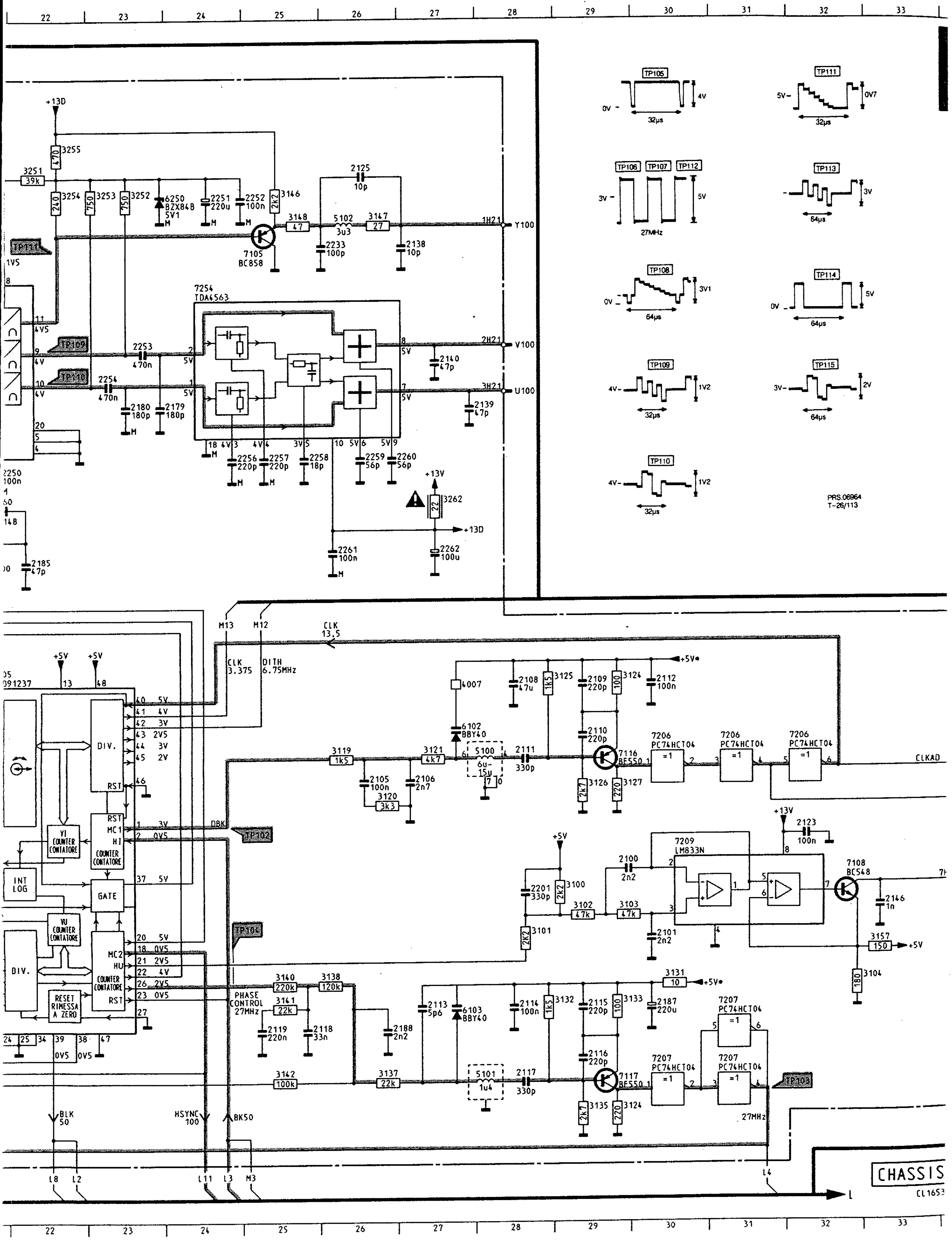
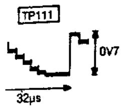
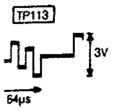
HIGH-END BOX 100Hz
M12
DITH
M13
CLK3.375
L.M14
CLKIN 13.5MHz
+5VD
3301 33
2176 100n
2304 10n
7211 TDA8703
+5A
2307 100n
2301 100n
12 2V
13 2V
14 2V
15 2V
23 2V
24 2V
1 2V
16
2297 1u
2299 1u
3,6,10,20,22
2166 47p
2298 18p
2312 18p
+13V
3153 1k2
7160 BC858
3169 1M
7120 BC848C
TP108
7159 BC848
3155 270
2147 6p8
7119 BC848C
2153 220n
3H22
2150 330n
3152 620
5150 15u
3159 2k2
2130 100p
7210
RY
3151 1k
2151 10p
2152 56p
3158 330
3160 240
2199 47p
7214 HCT195
+5L
2172 100n
CLKIN +5L 13.5MHz
M6
3305 RES
M5
3304 0
3306 RES
3302 33
2175 100n
2305 10n
7212 TDA8703
2308 100n
2302 100n
2293 1u
2295 1u
2167 47p
7215 HCT195
WEU/V
2173 100n
7124 BC848C
2148 220p
3156 1k
3299 560
2158 100n
7121 BC848C
TP113
2H22
3161 220
5151 56u
3164 2k2
2155 39p
2156 150p
2157 150p
3173 560
RUV
3163 1k
2287 47p
7216 HCT195
2174 100n
+13V
3310 9k1
7210 4066
L3
TP114
M3
BK50
3303 33
2178 100n
2306 10n
7213 TDA8703
2309 100n
2303 100n
2285 1u
2291 1u
2168 47p
7217 HCT195
2175 100n
CLKIN 13.5MHz
+5V 5104 +5L
7125 BC848C
2149 220p
3162 1k
3298 560
2162 100n
7122 BC848C
TP115
4H22
3168 220
5152 56u
3166 2k2
2159 33p
2160 150p
2161 150p
3174 560
3165 1k
2286 100p
8H21
7H21
6H21
+5IN
5H21
2182 100n
4H21
3256 680
2169 100u
6150 5V6
3171 1k
3172 1k
2154 100n
3170 1k
3297 261
7170 BC858C
2163 100n
7123 BC858C
3296 560
2170 100n
7206 PC74HCT04
7207 PC74HCT04
A B C D E F G H I J K L M N O
1 2 3 4 5 6 7 8 9 10 11 12

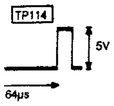

CLKIN 13.5MHz
7250 4C1050
7251 4C1050
7252 4C1050
RAM
5105
5106
5107
2270 100n
2271 100n
2272 100n
7253 SDA9060
PAR.
X2
DE MUX
V X2
G
TP105
TP106
TP107
TP109
TP110
TP111
TP112
TP101
+13D
3255 470
3254 240
3251 39k
2164 100n
5109
2277 47u
2255 100n
2250 100n
3280 1k
3281 2k2
3279 1k2
2186 4p7
2185 47p
6160 LL4148
7111 BC848
7110 BC858C
BLN100
REU/V
REY
CLK OUT 27MHz
RSTR
RTSW
WEU/V
WEY
2172 100n
2173 100n
2174 100n
2175 100n
2312 18p
5104
7204 PCF80C51
1100 12MHz
2103 27p
2102 27p
RESET RIMESSA A.ZERO
DATA PROC.
7205 UPD91237
VI COUNTER CONTATORE
INT LOG
VU COUNTER CONTATORE
DIV.
3212 10k
3143 100k
3122 47k
7103 BC858
7100 BC848
7113 BC848
3111 47k
3113 10
3114 100k
3110 1k
2121 22n
2104 10u
3276 3k9
7158 BC848
3275 1k
3115 RES
3274 22k
7157 BC848
2134 1n
3217 100
2131 100p
2133 100p
7207 PC74HCT04
FBL
VPIP
CTI
RXD TXD
V 50
V SYNC
BLK 50
BK50
1H22
8H22
9H22
8H20
M1
M3
L18
L19
L3
L17
L7
L8
L2

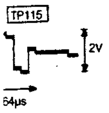

22
23
24
25
26
27
28
29
30
31
32
33
+13D
3255
470
3251
39k
3254
240
3253
750
3252
750
6250
BZX84B
5V1
2251
220u
2252
100n
3146
2k2
3148
47
5102
3u3
3147
27
2125
10p
2233
100p
2138
10p
1H21
Y100
TP111
1V5
7105
BC858
7254
TDA4563
2253
470n
2254
470n
TP109
TP110
2180
180p
2179
180p
2H21
V100
3H21
U100
2140
47p
2139
47p
2256
220p
2257
220p
2258
18p
2259
56p
2260
56p
+13V
3262
22
+13D
2261
100n
2262
100u
2250
100n
2185
47p
TP105
0V
4V
32µs
TP111
5V
0V7
32µs
TP106
TP107
TP112
3V
5V
27MHz
TP113
3V
64µs
TP108
0V
3V1
64µs
TP114
0V
5V
64µs
TP109
4V
1V2
32µs
TP115
3V
2V
64µs
TP110
4V
1V2
32µs
PRS.06964
T-26/113
M13
M12
CLK
13,5
CLK
3.375
DITH
6.75MHz
+5V
+5V
091237
DIV.
RST
YI COUNTER CONTATORE
COUNTER CONTATORE
MC1
HI
INT LOG
GATE
VU COUNTER CONTATORE
DIV.
MC2
HU
COUNTER CONTATORE
RESET RIMESSA A ZERO
DBK
TP102
TP104
+5V*
4007
2108
47u
3125
1k5
2109
220p
3124
100
2112
100n
6102
BBY40
3119
1k5
3121
4k7
5100
6u-15u
2111
330p
2110
220p
7116
BF550
2105
100n
2106
2n7
3120
3k3
3126
2k7
3127
220
7206
PC74HCT04
=1
CLKAD
+13V
2123
100n
7209
LM833N
+5V
2201
330p
3100
2k2
2100
2n2
3102
47k
3103
47k
2101
2n2
3101
2k2
7108
BC548
2146
1n
3157
150
+5V
3104
180
PHASE CONTROL 27MHz
3140
220k
3138
120k
3141
22k
2119
220n
2118
33n
2188
2n2
2113
5p6
6103
BBY40
2114
100n
3132
1k5
2115
220p
3133
100
3131
10
+5V*
2187
220u
2116
220p
7207
PC74HCT04
3142
100k
3137
22k
5101
1u4
2117
330p
7117
BF550
3135
2k7
3124
220
TP103
27MHz
BLK 50
HSYNC 100
BK50
L8
L2
L11
L3
M3
L4
CHASSIS
CL1653

# M









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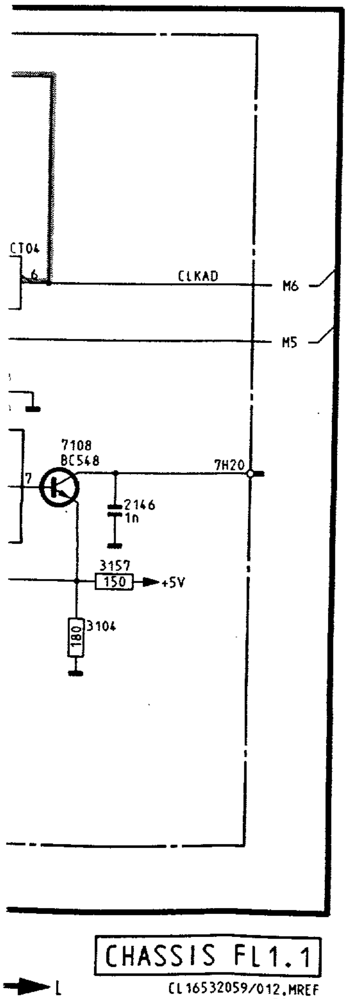

CHASSIS FL1.1

CL16532059/012.MREF
221091

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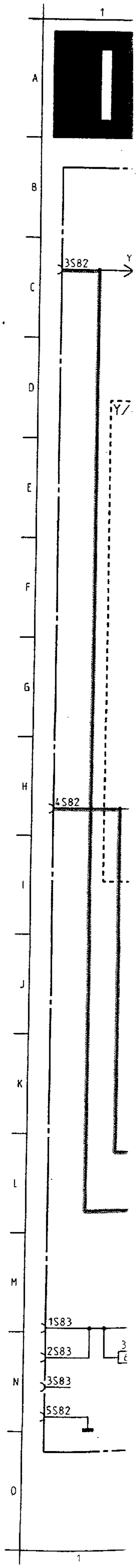
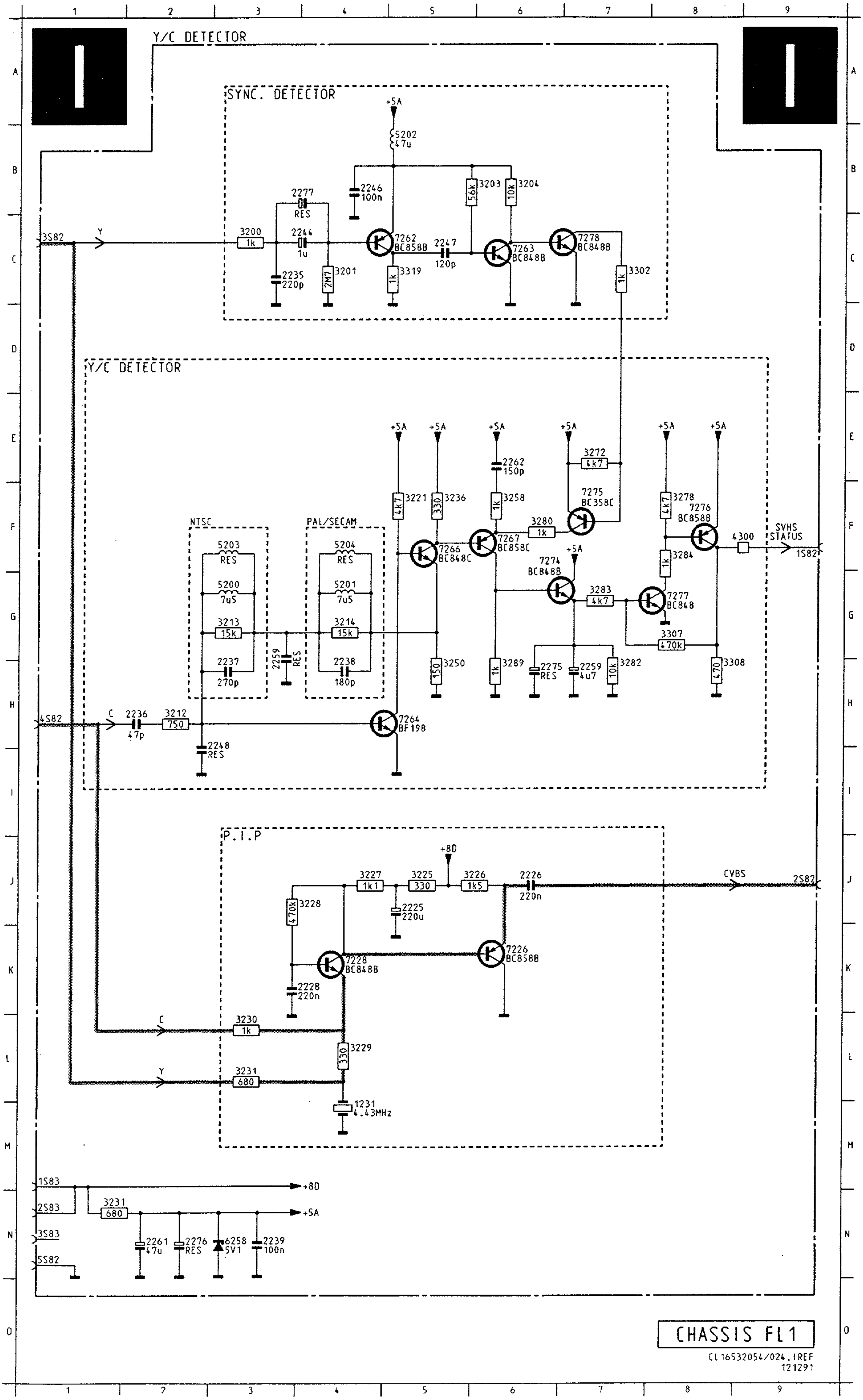
| | 2101 | L30 | 3120 | J26 | 7209 | K30 |
| | 2102 | J17 | 3121 | J27 | 7210 | D 3 |
| A | 2103 | J17 | 3122 | I15 | 7210 | D 6 |
| | 2104 | K15 | 3124 | I29 | 7210 | H 6 |
| | 2105 | J26 | 3124 | N29 | 7210 | L 6 |
| | 2106 | J27 | 3125 | I28 | 7210 | I 3 |
| | 2108 | I28 | 3126 | J29 | 7211 | B 9 |
| | 2109 | I29 | 3127 | J29 | 7212 | F 9 |
| | 2110 | I29 | 3131 | M30 | 7213 | J 9 |
| | 2111 | J28 | 3132 | M28 | 7214 | D10 |
| B | 2112 | I30 | 3133 | M29 | 7215 | F10 |
| | 2113 | M27 | 3135 | N29 | 7216 | H10 |
| | 2114 | M28 | 3137 | N26 | 7217 | K10 |
| | 2115 | M29 | 3138 | M26 | 7250 | B14 |
| | 2116 | N29 | 3140 | M25 | 7251 | D14 |
| | 2117 | N28 | 3141 | M25 | 7252 | F14 |
| | 2118 | M25 | 3142 | N25 | 7253 | D18 |
| | 2119 | M25 | 3143 | I15 | 7254 | D24 |
| C | 2121 | K13 | 3146 | B25 | | |
| | 2123 | K32 | 3147 | C26 | | |
| | 2125 | B26 | 3148 | C25 | | |
| | 2130 | D 2 | 3151 | D 3 | | |
| | 2131 | N18 | 3152 | C 3 | | |
| | 2133 | N14 | 3153 | B 3 | | |
| | 2134 | L15 | 3155 | C 4 | | |
| D | 2138 | C27 | 3156 | G 4 | | |
| | 2139 | E27 | 3157 | L33 | | |
| | 2140 | E27 | 3158 | D 5 | | |
| | 2146 | L33 | 3159 | D 2 | | |
| | 2147 | C 4 | 3160 | D 6 | | |
| | 2148 | G 3 | 3161 | G 3 | | |
| | 2149 | K 3 | 3162 | K 4 | | |
| | 2150 | C 2 | 3163 | H 6 | | |
| E | 2151 | D 4 | 3164 | H 2 | | |
| | 2152 | D 5 | 3165 | L 6 | | |
| | 2153 | C 5 | 3166 | L 2 | | |
| | 2154 | M 7 | 3168 | L 3 | | |
| | 2155 | H 2 | 3169 | B 5 | | |
| | 2156 | H 3 | 3170 | M 8 | | |
| | 2157 | H 4 | 3171 | M 6 | | |
| F | 2158 | G 5 | 3172 | M 7 | | |
| | 2159 | L 2 | 3173 | H 5 | | |
| | 2160 | L 3 | 3174 | L 5 | | |
| | 2161 | L 4 | 3212 | I13 | | |
| | 2162 | L 5 | 3217 | M17 | | |
| | 2164 | C21 | 3251 | B22 | | |
| | 2166 | D 8 | 3252 | B23 | | |
| | 2167 | H 8 | 3253 | B23 | | |
| G | 2168 | M 8 | 3254 | B22 | | |
| | 2169 | M 5 | 3255 | B22 | | |
| | 2172 | F12 | 3256 | M 4 | | |
| | 2173 | H12 | 3262 | F27 | | |
| | 2174 | J12 | 3274 | L17 | | |
| | 2175 | L12 | 3275 | L14 | | |
| | 2175 | F 7 | 3279 | G20 | | |
| H | 2176 | B 7 | 3280 | F20 | | |
| | 2178 | J 7 | 3281 | F21 | | |
| | 2179 | E24 | 3296 | N 7 | | |
| | 2180 | E23 | 3297 | N 7 | | |
| | 2182 | N 2 | 3298 | L 5 | | |
| | 2182 | N 8 | 3299 | G 5 | | |
| | 2182 | N 6 | 3301 | A 8 | | |
| | 2185 | G22 | 3302 | E 8 | | |
| I | 2186 | G20 | 3303 | J 8 | | |
| | 2187 | M30 | 3304 | E 2 | | |
| | 2188 | M26 | 3305 | D 2 | | |
| | 2199 | D 7 | 3306 | E 3 | | |
| | 2201 | K28 | 3310 | I 4 | | |
| | 2233 | C26 | 4007 | I27 | | |
| | 2250 | F21 | 5100 | J28 | | |
| J | 2251 | C24 | 5101 | N28 | | |
| | 2252 | C25 | 5102 | C26 | | |
| | 2253 | D23 | 5104 | M11 | | |
| | 2254 | E23 | 5105 | A15 | | |
| | 2255 | C20 | 5106 | D15 | | |
| | 2256 | F24 | 5107 | F15 | | |
| | 2257 | F25 | 5109 | C20 | | |
| | 2258 | F25 | 5150 | C 4 | | |
| K | 2259 | F26 | 5151 | G 4 | | |
| | 2260 | F26 | 5152 | L 4 | | |
| | 2261 | G26 | 6102 | I27 | | |
| | 2262 | G27 | 6103 | M27 | | |
| | 2270 | A15 | 6150 | M 5 | | |
| | 2271 | D15 | 6160 | F21 | | |
| | 2272 | F15 | 6250 | C24 | | |
| | 2277 | C20 | 7100 | J15 | | |
| L | 2286 | L 7 | 7103 | I16 | | |
| | 2287 | H 7 | 7105 | C25 | | |
| | 2289 | L 8 | 7108 | K32 | | |
| | 2291 | L 8 | 7110 | G21 | | |
| | 2293 | H 8 | 7111 | G20 | | |
| | 2295 | H 8 | 7113 | J14 | | |
| | 2297 | D 8 | 7116 | J29 | | |
| M | 2298 | C10 | 7117 | N29 | | |
| | 2299 | D 8 | 7119 | C 5 | | |
| | 2301 | C 7 | 7120 | C 6 | | |
| | 2302 | G 7 | 7121 | G 6 | | |
| | 2303 | K 7 | 7122 | K 6 | | |
| | 2304 | B 9 | 7123 | N 6 | | |
| | 2305 | F 9 | 7124 | G 4 | | |
| | 2306 | J 9 | 7125 | K 4 | | |
| N | 2307 | B 7 | 7157 | L16 | | |
| | 2308 | F 7 | 7158 | L15 | | |
| | 2309 | K 7 | 7159 | C 3 | | |
| | 2312 | C11 | 7160 | B 3 | | |
| | 3100 | K29 | 7170 | N 8 | | |
| | 3101 | L28 | 7204 | I18 | | |
| | 3102 | L29 | 7205 | I21 | | |
| | 3103 | L29 | 7206 | M 9 | | |
| O | 3104 | M32 | 7206 | J30 | | |
| | 3110 | J16 | 7206 | J31 | | |
| | 3111 | J15 | 7206 | J32 | | |
| | 3113 | J14 | 7207 | M11 | | |
| | 3114 | J15 | 7207 | N30 | | |


1
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
3S82
Y
4S82
1S83
2S83
3S83
5S82
1

# Y/C Detector Y/C Detektor Détecteur Y/C

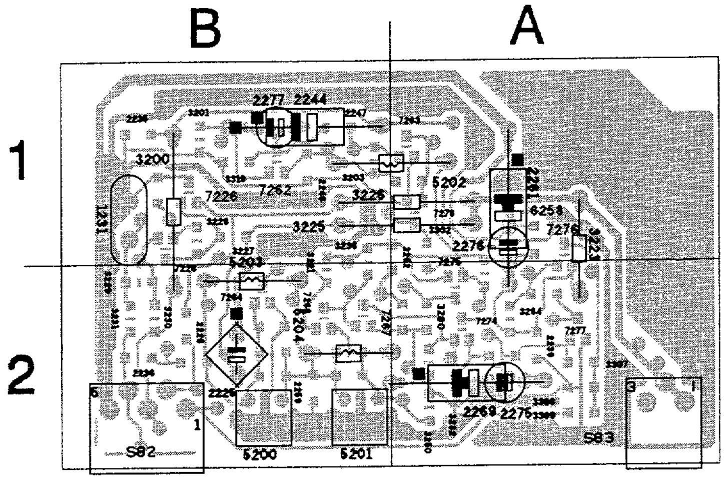

Y/C DETECTOR
SYNC. DETECTOR
Y/C DETECTOR
NTSC
PAL/SECAM
P.I.P
+5A
5202 47u
2246 100n
3203 56k
3204 10k
2277 RES
3200 1k
2244 1u
2235 220p
3201 2M7
7262 BC858B
3319 1k
2247 120p
7263 BC848B
7278 BC848B
3302 1k
3S82
Y
3272 4k7
7275 BC358C
3221 4k7
3236 330
2262 150p
3258 1k
3280 1k
3278 4k7
7276 BC858B
4300
SVHS STATUS
1S82
5203 RES
5200 7u5
3213 15k
2237 270p
5204 RES
5201 7u5
3214 15k
2238 180p
2259 RES
7266 BC848C
7267 BC858C
7274 BC848B
3283 4k7
7277 BC848
3284 1k
3307 470k
3250 150
3289 1k
2275 RES
2259 4u7
3282 10k
3308 470
4S82
C
2236 47p
3212 750
2248 RES
7264 BF198
+8D
3227 1k1
3225 330
3226 1k5
2226 220n
CVBS
2S82
3228 470k
2225 220u
7228 BC848B
7226 BC858B
2228 220n
3230 1k
3229 330
3231 680
1231 4.43MHz
1S83
2S83
3S83
5S82
+8D
+5A
3231 680
2261 47u
2276 RES
6258 5V1
2239 100n
CHASSIS FL1
CL 16532054/024.IREF 121291
1 2 3 4 5 6 7 8 9
A B C D E F G H I J K L M N O

| | | |
|---|---|---|
| 1231 | M | 4 |
| 2225 | J | 5 |
| 2226 | J | 6 |
| 2228 | K | 3 |
| 2235 | C | 3 |
| 2236 | H | 2 |
| 2237 | H | 3 |
| 2238 | H | 4 |
| 2239 | N | 3 |
| 2244 | C | 4 |
| 2246 | B | 4 |
| 2247 | C | 5 |
| 2248 | I | 2 |
| 2259 | G | 3 |
| 2259 | H | 7 |
| 2261 | N | 2 |
| 2262 | E | 6 |
| 2275 | H | 6 |
| 2276 | N | 2 |
| 2277 | B | 4 |
| 3200 | C | 3 |
| 3201 | C | 4 |
| 3203 | B | 5 |
| 3204 | B | 6 |
| 3212 | H | 2 |
| 3213 | G | 3 |
| 3214 | G | 4 |
| 3221 | F | 5 |
| 3225 | J | 5 |
| 3226 | J | 5 |
| 3227 | J | 4 |
| 3228 | J | 4 |
| 3229 | L | 4 |
| 3230 | L | 3 |
| 3231 | L | 3 |
| 3231 | N | 1 |
| 3236 | F | 5 |
| 3250 | G | 5 |
| 3258 | F | 6 |
| 3272 | E | 7 |
| 3278 | F | 8 |
| 3280 | F | 6 |
| 3282 | G | 7 |
| 3283 | G | 7 |
| 3284 | F | 8 |
| 3289 | G | 6 |
| 3302 | C | 7 |
| 3307 | G | 8 |
| 3308 | G | 8 |
| 3319 | C | 5 |
| 4300 | F | 9 |
| 5200 | G | 3 |
| 5201 | G | 4 |
| 5202 | B | 5 |
| 5203 | F | 3 |
| 5204 | F | 4 |
| 6258 | N | 3 |
| 7226 | K | 6 |
| 7228 | K | 4 |
| 7262 | C | 5 |
| 7263 | C | 6 |
| 7264 | H | 5 |
| 7266 | F | 5 |
| 7267 | F | 6 |
| 7274 | F | 6 |
| 7275 | F | 7 |
| 7276 | F | 8 |
| 7277 | G | 8 |
| 7278 | C | 7 |

Y/C

| | |
|---|---|
| 31 | M 4 |
| 25 | J 5 |
| 26 | J 6 |
| 28 | K 3 |
| 35 | C 3 |
| 36 | H 2 |
| 37 | H 3 |
| 38 | H 4 |
| 39 | N 3 |
| 44 | C 4 |
| 46 | B 4 |
| 47 | C 5 |
| 48 | I 2 |
| 59 | G 3 |
| 59 | H 7 |
| 61 | N 2 |
| 62 | E 6 |
| 75 | H 6 |
| 76 | N 2 |
| 77 | B 4 |
| 00 | C 3 |
| 01 | C 4 |
| 03 | B 5 |
| 04 | B 6 |
| 12 | H 2 |
| 13 | G 3 |
| 14 | G 4 |
| 21 | F 5 |
| 25 | J 5 |
| 26 | J 5 |
| 27 | J 4 |
| 28 | J 4 |
| 29 | L 4 |
| 30 | L 3 |
| 31 | L 3 |
| 31 | N 1 |
| 36 | F 5 |
| 50 | G 5 |
| 58 | F 6 |
| 72 | E 7 |
| 78 | F 8 |
| 30 | F 6 |
| 32 | G 7 |
| 33 | G 7 |
| 34 | F 8 |
| 39 | G 6 |
| 02 | C 7 |
| 07 | G 8 |
| 08 | G 8 |
| 19 | C 5 |
| 00 | F 9 |
| 00 | G 3 |
| 01 | G 4 |
| 02 | B 5 |
| 03 | F 3 |
| 04 | F 4 |
| 58 | N 3 |
| 26 | K 6 |
| 28 | K 4 |
| 52 | C 5 |
| 53 | C 6 |
| 54 | H 5 |
| 56 | F 5 |
| 57 | F 6 |
| 74 | F 6 |
| 75 | F 7 |
| 76 | F 8 |
| 77 | G 8 |
| 78 | C 7 |

# Y/C Detector panel
# Y/C Detektor Platine
# Platine du détecteur Y/C


B
A
1
2
2277 2244
3200
1231
7226
7262
3226
3225
5202
6258
7276
3221
5203
2276
6204
2269
2275
2226
S82
5200
5201
S83
6
1
3
1

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S82 | B2 | 2239 | A2 | 2276 | A1 | 3221 | B2 | 3250 | A2 | 3307 | A2 | 6258 | A1 | 7276 | A1 |
| S83 | A2 | 2244 | B1 | 2277 | B1 | 3223 | A1 | 3258 | B2 | 3308 | A2 | 7226 | B1 | 7277 | A2 |
| 1231 | B1 | 2246 | B1 | 3190 | A2 | 3225 | A1 | 3272 | A2 | 3319 | B1 | 7228 | B1 | 7278 | A1 |
| 2225 | B2 | 2247 | B1 | 3200 | B1 | 3226 | A1 | 3278 | A2 | 3991 | A2 | 7262 | B1 | | |
| 2226 | B2 | 2248 | B2 | 3201 | A1 | 3227 | B1 | 3280 | A2 | 4300 | A2 | 7263 | A1 | | |
| 2228 | B1 | 2259 | B2 | 3203 | B1 | 3228 | B1 | 3282 | A2 | 5200 | B2 | 7264 | B2 | | |
| 2235 | B1 | 2261 | A1 | 3204 | A1 | 3229 | B2 | 3283 | A2 | 5201 | B2 | 7266 | B2 | | |
| 2236 | B2 | 2262 | B2 | 3212 | B2 | 3230 | B2 | 3284 | A2 | 5202 | B1 | 7267 | B2 | | |
| 2237 | B2 | 2269 | A2 | 3213 | B2 | 3231 | B2 | 3289 | A2 | 5203 | B2 | 7274 | A2 | | |
| 2238 | B2 | 2275 | A2 | 3214 | B2 | 3236 | B2 | 3302 | A2 | 5204 | B2 | 7275 | A2 | | |

## Setting conditions

- * Unless stated otherwise, the supply voltage used is:
  220 - 240V ± 10%; 50 - 60Hz ± 5%
- * Voltages and oscillograms are measured in relation to tuner earth. **Never** use the cooling plates as earth.
- * Warming-up time ≈ 10 minutes
- * For all measurements it is true that:
  probe Ri > 1MΩ; Ci < 10pF

## 1. Electrical settings on the large signal panel

### 1.1 +141V supply voltage

Supply the mains voltage; this must be isolated from the mains.
Connect a voltmeter over C2238.
Using R3371, on the SOPS DRIVE CIRCUIT (fig. 7.2) set the supply voltage to + 141V ± 0.5V.

### 1.2 Focusing

This is set with the focus potentiometer (top one on the Line output transformer).

### 1.3 Vg2 setting

Supply an aerial signal.
Set the contrast to maximum and the brightness and saturation to nominal.
Using an oscilloscope set to field frequency, measure the direct voltage level of the measurement pulse (fig. 7.1) on pin 9 of IC7705, IC7706 and IC7707 in relation to earth.
Now adjust the highest voltage level found with the aid of the Vg2 potentiometer (bottom left on the Line output transformer) to 150V ± 2V.

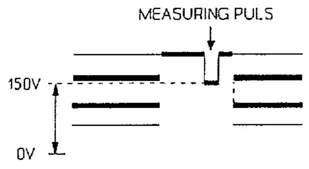


Fig. 7.1

### 1.4 Stable OSD

Short circuit pin 11 IC7401 to pin 13 IC7401
Short circuit pin 5 IC7755 to earth.
Measure the frequency on pin 16-IC7401 and set this to 15,625 Hz ± 25 Hz with R3434.
Remove the short circuits.

### 1.5 Horizontal synchronisation

Connect point 5-IC7400 to point 9-IC7400.
Supply an aerial signal and set the receiver.
Adjust potentiometer R3406 until the picture is straight.
Break the through connection.

### 1.6 Horizontal centring

Set using potentiometer R3513.

### 1.7 Picture width

Set using potentiometer R3607.

### 1.8 Vertical centring

Set using potentiometer R3467.

### 1.9 Picture height

Set using potentiometer R3410.

### 1.10 East/West correction

Set using potentiometer R3602.

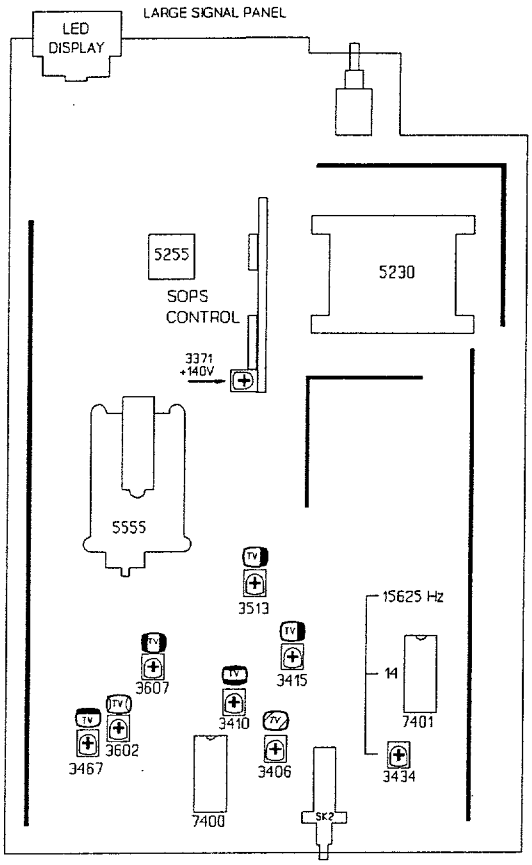


Fig. 7.2

# Electrical adjustments

## 2. Electrical settings on the small signal panel

**2.1 Stereo audio channel separation**
Connect a signal generator with a 2 carrier stereo signal ("stereo" mode).
Select 1kHz for the right-hand channel and switch off the sound for the left-hand channel.
Connect an oscilloscope to pin 3 of Euroconnector EXT1
Using R3602 on the small signal panel, set the amplitude of the signal to minimum amplitude.

**2.2 4.43 MHz chroma suppression circuit**
Supply a colour bar signal. Connect an oscilloscope to point 17 of IC7324 and set L5305 to minimum amplitude of the chrominance signal.

**2.3a Electrical settings for sets with IC7364 - TDA4510**

a-1 *Chroma bandpass filter*
Connect a signal generator (e.g. PM 5326) to pin 20 of the euroconnector (EXT1) and set its frequency to 4.43 MHz. Connect the unit to EXT1.
Connect an oscilloscope to pin 9-IC7364.
Set L5354 to maximum amplitude.

a-2 *Chroma auxiliary oscillator*
Connect a pattern generator and supply a PAL colour bar pattern. Connect pin 11-IC7364 (TDA4510) to earth. Set C2380 so that the colour on the screen has practically stopped. Remove the interconnection.

**2.3b Electrical settings for sets with IC7365 - TDA4650**

b-1 *Chroma bandpassfilter*
Connect a signal generator (e.g. PM 5326) to pin 20 of the euroconnector (EXT1) and set its frequency to 4.286 MHz/0.2 Vpp. Switch the unit to EXT1. Connect pin 27-IC7365 to pin 13-IC7365 (+12V). Connect an oscilloscope to pin 15-IC7365.
Set L5345 to maximum amplitude.
Remove the interconnection.

b-2 *4.50 MHz NTSC sound suppression*
Connect a generator to point 20 of Euroconnector EXT1 with a frequency of 4.50 MHz and 200mV$_{rms}$.
Connect point 26-IC7365 to point 13-IC7365.
Connect an oscilloscope to point 15 of IC7365.
Set L5346 to minimum amplitude.
Remove the short circuit.

b-3 *6.50 MHz SECAM DK sound suppression*
Connect a sine-wave generator to point 20 of Euroconnector EXT1 with a frequency of 6.50 MHz and 200mV$_{rms}$.
Connect point 28-IC7365 to point 13-IC7365.
Connect an oscilloscope to point 15 of IC7365.
Set L5346 to minimum amplitude.
Remove the short circuit.

b-4 *Chroma 8,87 MHz auxiliary oscillator*
Connect a pattern generator and supply a PAL colour bar pattern. Connect pin 17-IC7365 (TDA4650) to earth. Set C2380 so that the colour on the screen has practically stopped. Remove the interconnection.

b-5 *Chroma 7,16 MHz auxiliary oscillator*
Connect a pattern generator and supply a PAL colour bar pattern. Connect pin 17-IC7365 (TDA4650) to earth. Set R2379 so that the colour on the screen has practically stopped. Remove the interconnection.

b-6 *SECAM demodulators*
Connect a pattern generator and supply a SECAM black pattern. Connect an oscilloscope to pin 3-IC7365. Set L5370 to minimum amplitude.
Connect the oscilloscope to pin 1-IC7365. Set R3370 to minimum amplitude.

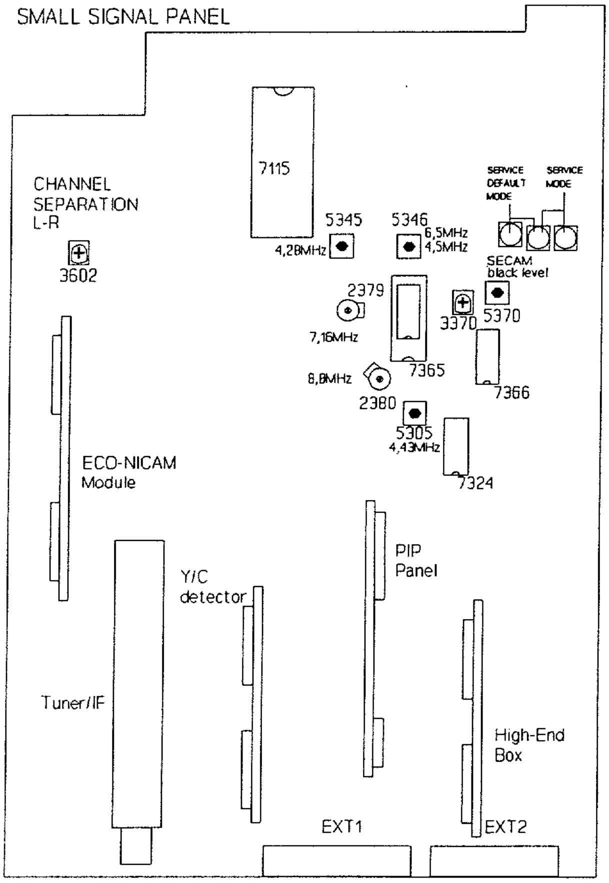


Fig. 7.3

3.
3.1
3.2
3.3

PAL
5
he colour
nove the

PAL
5
ne colour
nove the

SECAM
pin
de.
. Set

SERVICE MODE
1
vel
-End

## 3. Electrical adjustments on the high-end box

**3.1 Synchronisation**
Connect point 5 of IC7203 to earth. Adjust R3228 until the picture is straight.
Remove the short circuit.

**3.2 13.5 MHz oscillator**
Measure the signals at point 1 of IC7205 and at point 5 Of IC7203 simultaneously with an oscilloscope (fig. 7.2). Adjust coil L5100 so that the positive-going flank of the signal at point 1 of IC7205 comes 7.62 µsec after the negative-going flank of the sync pulse in the video signal (point 5 of IC7203).

**3.3 27 MHz oscillator**
Apply a PAL/SECAM signal. Short pin 28 of IC7204 to earth. Measure the frequency at point 6 of IC7207. Using L5101 set the frequency to 27 MHz ± 50 kHz.

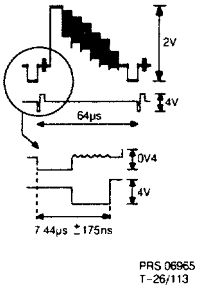

2V
4V
64µs
0V4
4V
7.44µs ± 175ns
PRS 06965
T-26/113

Fig. 7.4

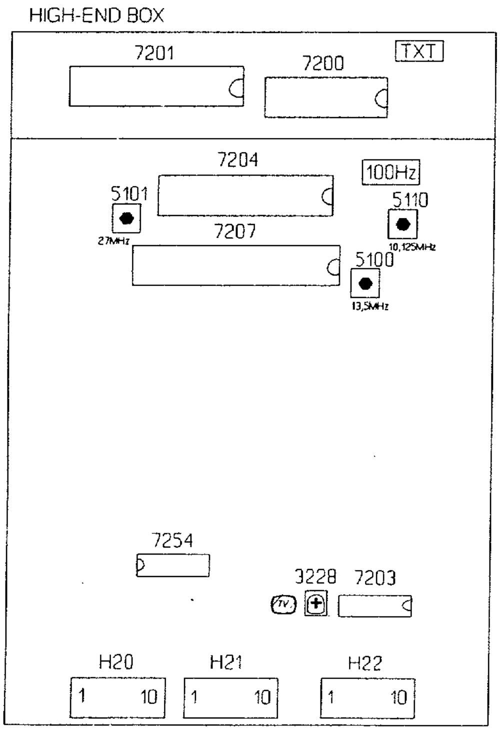

HIGH-END BOX
7201
7200
TXT
7204
100Hz
5101
5110
27MHz
7207
10,125MHz
5100
13,5MHz
7254
3228
7203
H20
H21
H22
1
10
1
10
1
10

Fig. 7.5

## 4. Electrical settings on the ECO-NICAM decoder panel

**4.1 Neutral frequency adjustment**
Connect a frequency counter via a probe (Ci ≤15pF) to pin 19 of IC7001 (SAA 7280) and pin 15 (GND).
Adjust C2015 in such a manner that the clock frequency is set at 728.025 kHz. (± 5Hz)

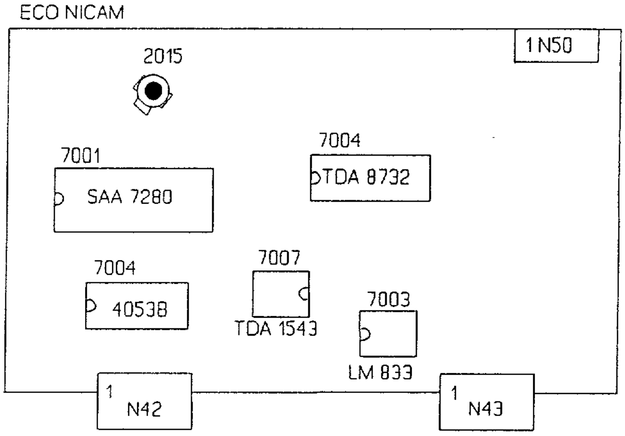

ECO NICAM
1N50
2015
7001
SAA 7280
7004
TDA 8732
7004
40538
7007
TDA 1543
7003
LM 833
1
N42
1
N43

Fig. 7.6

## 5. Y/C detector adjustment

**PAL/SECAM**
Inject a chroma signal of 4.418 MHz/200mV on pi 15 of EXT2 SCART (PL05).
Connect an oscilloscope to the collector of T7266 (T7). Using L5201 adjust the 4.418 MHz signal to maximum amplitude.

**NTSC**
As PAL/SECAM but with a signal of 3.582 MHz/200mV. Adjust with L5200.

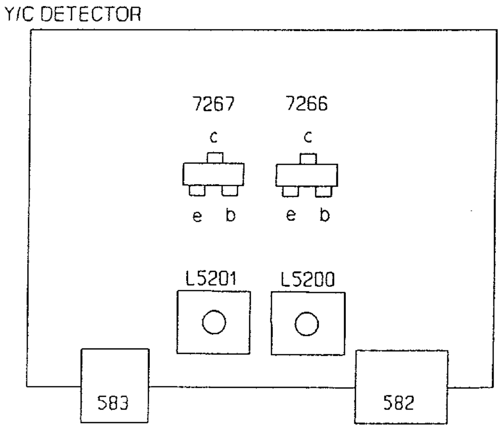

Y/C DETECTOR
7267
7266
c
c
e b
e b
L5201
L5200
583
582

Fig. 7.7

## 6. Electrical settings on the PIP panel

Before carrying out each setting, it should be ensured that a P.I.P. picture with colour bar is visible on the screen and the unit should have reached its operating temperature (after ≈ 20 min.).

### 6.1 Horizontal synchronisation

Supply an aerial or generator signal.
Connect pin 28-IC7125 to pin 13-IC7125.
Connect pin 5-IC7755 to earth.
Measure the frequency on pin 17-IC7755 and set this to 15,625 Hz ± 25 Hz with R3239.
Remove the short circuits.

### 6.2 AGC

If the picture from a strong local transmitter is distorted, adjust 3160 until the picture is not distorted.

### 6.3a Setting for PIP modules with TDA4510

*a-1 Chroma bandpass filter*

Connect a signal generator (e.g. PM 5326) to pin 10 of P17 and set its frequency to 4.43 MHz/0.2Vpp.
Connect an oscilloscope to pin 9-IC7126.
Set L5118 to maximum amplitude.

*a-2 PAL chroma auxiliary oscillator*

Connect a pattern generator and supply a PAL colour bar pattern. Connect pin 11-IC7126 (TDA4510) to earth.
Set C2202 so that the colour of the PIP picture is practically still.
Remove the interconnection.

*a-3 The delayline*

Connect a pattern generator and supply a PAL colour bar signal. Connect the X-input of the oscilloscope to pin 1-IC7126 (TDA4510). Connect the Y-input of the oscilloscope to 2-IC7126 (TDA4510). Set the oscilloscope to the X-Y position.
Set L5155 and L5157 so that the vectors lie in one line (points which are furthest from the origin).
Set the pattern generator to the "DEM" mode.
Set R3157 so that the vectors lie on top of one another in the origin.

### 6.3b Setting for PIP modules with TDA4554

*b-1 Chroma bandpass filter*

Connect a signal generator (e.g. PM 5326) to pin 10 of P17 and set its frequency to 4.286 MHz/0.2 Vpp.
Connect pin 27-IC7125 to 13-IC7125. Connect an oscilloscope to pin 15-IC7125.
Set L5118 to maximum amplitude.
Remove the interconnection.

*b-2 PAL chroma auxiliary oscillator*

Connect a pattern generator and supply a PAL colour bar pattern. Connect pin 17-IC7125 (TDA4554) to earth.
Set C2202 so that the colour of the PIP picture is practically still.
Remove the interconnection.

*b-3 NTSC chroma auxiliary oscillator*

Connect a pattern generator and supply an NTSC M colour bar pattern. Connect pin 17-IC7125 to earth. Set C2212 so that the colour of the PIP picture is practically still.
Remove the interconnection.

*b-4 The delay line*

Connect a pattern generator and supply a PAL colour bar signal. Connect the X-input of the oscilloscope to pin 1-IC7125 (TDA4554). Connect the Y-input of the oscilloscope to pin 3-IC7125 (TDA4554). Set the oscilloscope to the X-Y position.
Set L5155 and L5157 so that the vectors lie in one line (points which are furthest from the origin).
Set the pattern generator to the "DEM" mode.
Set R3157 so that the vectors lie on top of one another in the origin.

*b-5 SECAM identification*

Connect a pattern generator and supply a SECAM colour bar signal.
Connect pin 27-IC7125 to pin 13-IC7125.
Connect an oscilloscope to pin 21-IC7125.
Adjust L5190 to maximum DC level.
Remove the interconnection.

*b-6 SECAM demodulators*

Connect a pattern generator and supply a SECAM signal without contents (black). Connect pin 27-IC7125 to pin 13-IC7125. Connect an oscilloscope to pin 1-IC7125. Using L5175, set the DC level during the scan equal to the DC level during the flyback.
In the same way set L5170, but now measure at pin 3-IC7125.
Remove the interconnection.

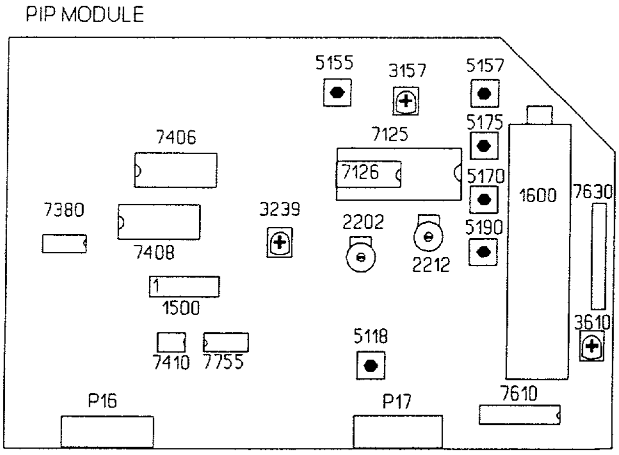


Fig. 7.8

7. A

Sv
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SE
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In
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pr
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7.1 W
Cc
pic
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-

-

7.2 Op
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Frc
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Op

Op
Th
ha
the

Fo
Fu
IC7
10

Op

## 7. Adjustments in the service menu

Switch in the service menu by connecting pins S23 and S24 on the small-signal panel briefly with each other (see section 9).
In the Service Mode the following menu appears in the picture:

SERVICE YY-MM-DD
a option 1 xxx
b option 2 xxx
c green xxx
d blue xxx

In this menu "YY-MM-DD" is the release date of the software which is present in the set. The desired adjustment can be selected with the aid of menu keys a, b or c on the remote control.
When the "PP store" key on the local keyboard is pressed, the adjusted values are stored in the memory and the Service Mode is left.

### 7.1 White balance

Connect a pattern generator and choose a white picture.

- Select c (green) or d (blue)
- Using P +/- adjust the values of green ("GREEN") and blue ("BLUE") until the desired white balance has been reached.
- Store the selected value by pressing the "PP store" key on the local keyboard.

### 7.2 Options

The control unit used in this set has been prepared for operation of all the functions possible with this set. For correct operation, however, the control unit has to "know" the functions/features located in the set. This is done with a so-called option code.

A number is allocated to each function. The possible functions are shown with their respective numbers in the tables alongside.

**Optioncode 1**
The numbers of the functions shown in the table have to be added to each other. The total forms the number for option code 1.

**For example, a set has:**

| *Function* | *Number* |
|---|---|
| Front-end FQ618/ME/IF | 2 |
| A PIP module | 8 |
| | --- + |
| **Optioncode 1 now becomes** | **10** |

**Option code 2**
The number of the functions shown in the table have to be added to each other. The total forms the number for option code 2.

**For example, a set has:**

| *Function* | *Number* |
|---|---|
| IC7175 present on SSP | 1 |
| 100 Hz high-end box | 4 |
| | --- + |
| **Option code 2 now becomes** | **5** |

The option codes are set as follows:

- Select a: option 1 or b: option 2
- Using P +/- set the desired option number.
- Store the value chosen by pressing the **"PP store"** key on the local keyboard.

These option codes are software adaptations. If the set has to be equipped for these features, the necessary hardware has also to be fitted.

| Optioncode 1 | |
|---|---|
| **Nbr.** | **Function** |
| 0 | **Front end = FQ816/IF**<br>A reception of PAL BG or PAL BG and SECAM BG is now possible. |
| 1 | **Front end = FQ844**<br>Only reception of the UHF band is now possible. |
| 2 | **Front end = FQ816/ME/IF**<br>Reception of SECAM L but not of SECAM L' is now possible (reception of NTSC-M is now usually also possible). |
| 4 | **Front end = FQ816/MF/IF**<br>Reception of both SECAM L and SECAM L' is now possible (NTSC M reception is generally possible now via the Euroconnector). |
| 8 | **PIP module fitted**<br>This makes it possible to show PIP (Picture In Picture) displays. |
| 16 | **NTSC-M reception possible**<br>This is normally always in combination with front end FQ816/ME/IF or FQ816/MF/IF. |
| 32 | **SECAM DK module fitted**<br>In this case transmissions using the SECAM DK system can also be received. |
| 64 | **NICAM module fitted**<br>In this case the digital sound with NICAM transmission can be received. |
| 128 | **Second front end for PIP fitted**<br>If this second front end is fitted a second transmitter can be displayed in the PIP picture. The PIP function (number 8) still applies. |

| Optioncode 2 | |
|---|---|
| **Nbr.** | **Function** |
| 1 | **IC7175 present on SSP**<br>Applicable in case IC7175 (PCF8574) is present on the SSP (this is the case in all FL1.1 AC sets). |
| 4 | **100 Hz High-end box fitted**<br>This will always be the case. |
| 32 | **NICAM module present**<br>In this case the digital sound broadcast in NICAM transmissions can also be received (see further the number 64 of option code 1). |

# Repair tips

## 1. The Service Default Mode

The FL1.1 is equipped with a service default mode. The service default mode is a fixed, definite state to which the set can be switched.

### 1.1 Definition state

The definition of the fixed state in the service default mode is as follows:

- all sound and picture controls are in the central position (exception volume which is turned down)
- tuned to 475.25 MHz
- system:
  * PAL/SECAM BG for Multi Europe
  * PAL I for UK
  * SECAM L for Multi French

### 1.2 Switch on and off

The service default mode is switched on by shorting pins S24 and S25 on the small signal panel.

The service default mode can only be switched off by switching the set to stand-by. If the set is switched off and then on again using the mains switch or the mains plug, the service default mode will remain on.

If the set switches to stand-by immediately after switching-on, the set cannot be operated and also cannot be switched to the service default mode. The child-proof lock has already been activated.
To deactivate the child-proof lock the following series of commands has to be given using the remote control (see also Section 9):
<MENU>-<BLUE>-<RED>-<MENU+>-<MENU OFF>

### 1.3 Fault signals

To indicate that the set is in the service default mode, the following is displayed on the screen:

**SERVICE 00 00 05 06 05**

The five numbers after the word "service" stand for the last five fault signals noted by the operator(s). The number on the extreme right represents the last fault signal, that on the extreme left the last fault signal but 4.
Since this enables fault reports to be looked at afterward, it means that intermittent faults can be traced.
When the set leaves the service default mode, the fault-report memory is cleared.

### 1.4 Operation

During the service default mode the set will accept all operating commands. When, however, the set is switched off and on, it will return to the state as defined above.

## 2. Software protection

If it is observed by the control that the front end has ceased to give an I²C response, or that IC7430, IC7600 and also IC 7680 are no longer giving any response, the set will switch to the protection mode since it will be assumed that the +5 V or the +13 V power-supply voltage is absent. This software protection device consists of a fault signal (LEDs ⏻ 🔇 ∞, code99) and the switching of the set to stand-by. To enable the fault to be traced, the set has now to be switched to the service default mode. The software protection system is then switched out of circuit.

## 3. Replacement of EEPROM IC7137

If, during a repair, the EEPROM has to be replaced, the microprocessor will detect that the EEPROM is empty. A fault signal (No. 21) will then be displayed.
If the service mode is now activated (see section 7), the microprocessor will load the EEPROM with a number of standard values for the white balance and the other linear settings. These values, however, must all be checked and, if necessary, re-adjusted.
All options have also to be set, the programs installed and the personal preference set.

# Faultfindingtree

front end
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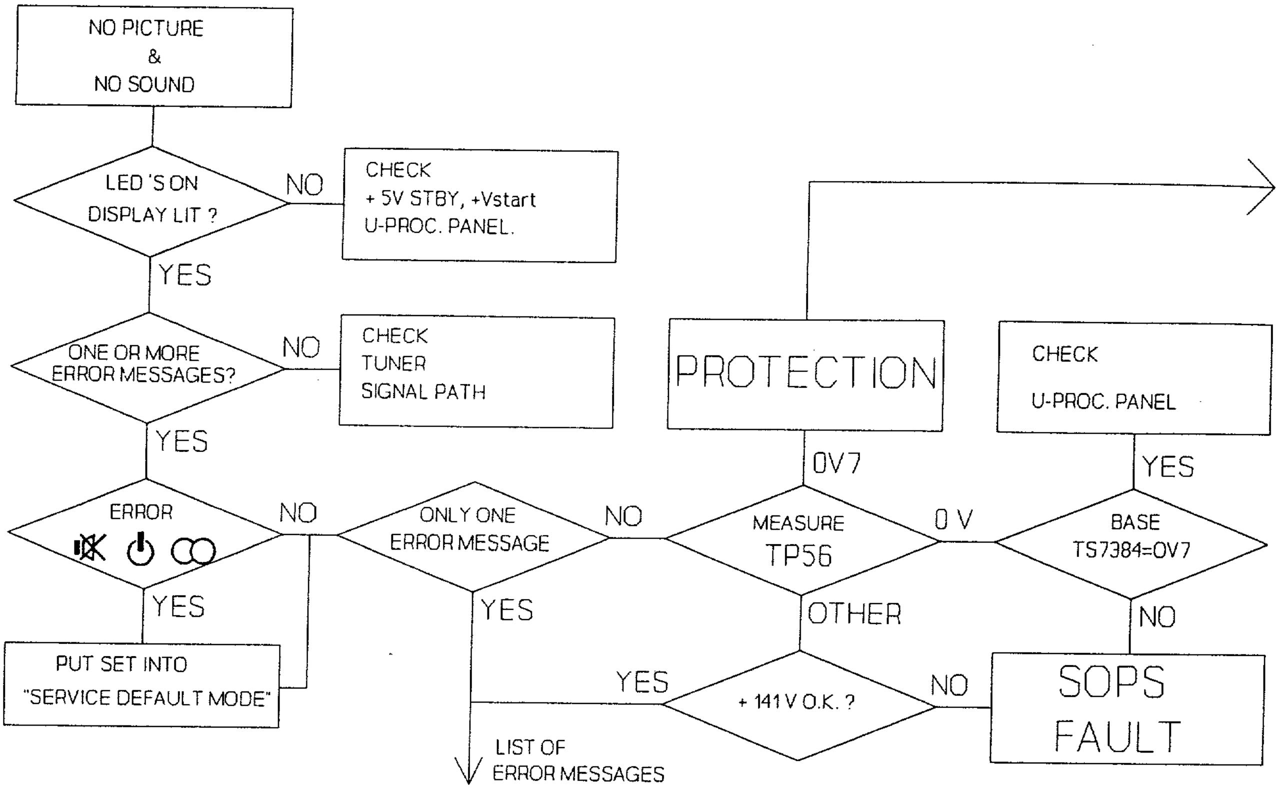
to the
that the
je is
consists
99) and
enable
o be
The
ched out

37

e
that the
1) will

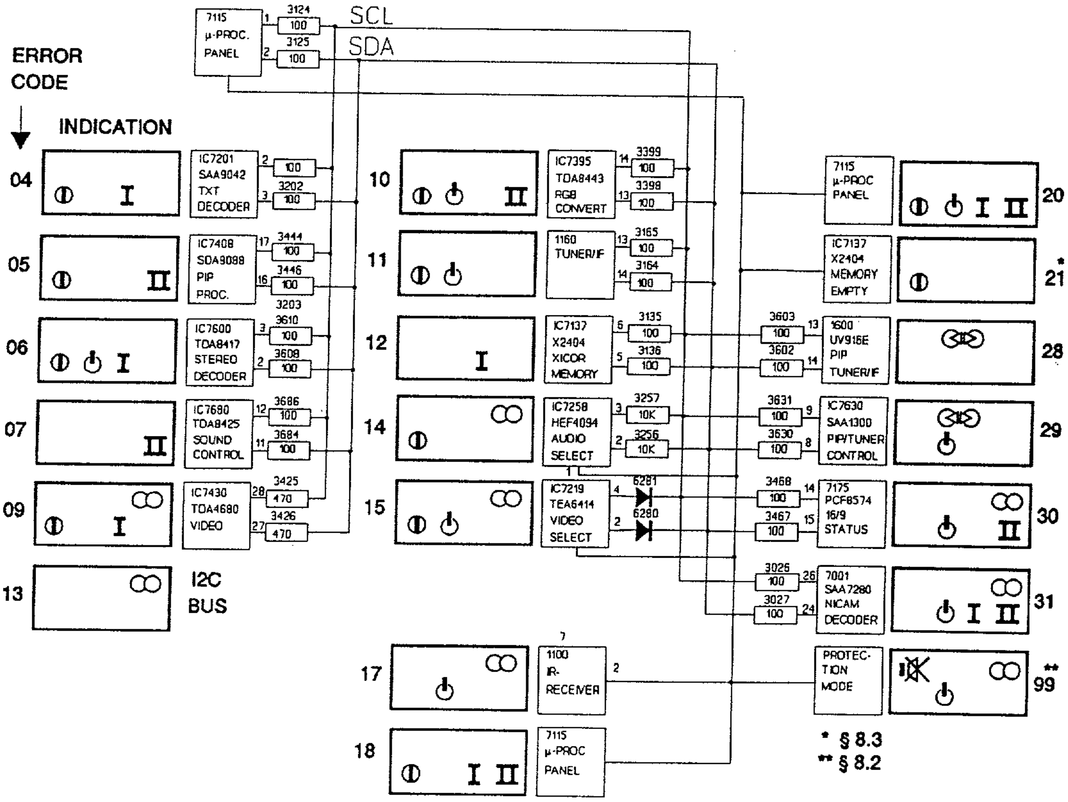
section
ROM
white
ese
d, if

ams


NO PICTURE & NO SOUND
LED'S ON DISPLAY LIT ?
NO
CHECK + 5V STBY, +Vstart U-PROC. PANEL.
YES
ONE OR MORE ERROR MESSAGES?
NO
CHECK TUNER SIGNAL PATH
YES
ERROR
NO
ONLY ONE ERROR MESSAGE
NO
MEASURE TP56
0 V
BASE TS7384=0V7
YES
CHECK U-PROC. PANEL
NO
SOPS FAULT
0V7
PROTECTION
OTHER
+ 141 V O.K. ?
YES
NO
YES
YES
PUT SET INTO "SERVICE DEFAULT MODE"
LIST OF ERROR MESSAGES

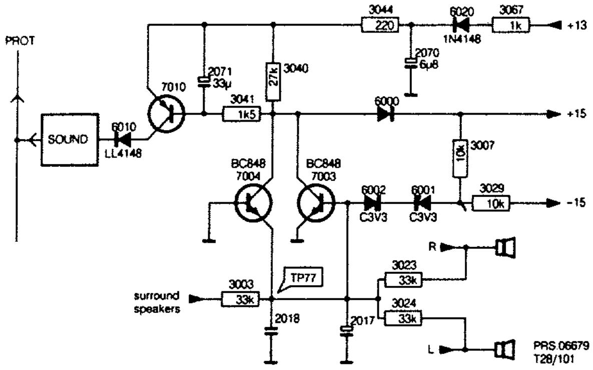
# List of error messages

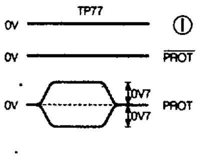
## I²C Blockdiagram


ERROR CODE
INDICATION
SCL
SDA
7115 µ-PROC. PANEL
3124 100
3125 100
04
IC7201 SAA5042 TXT DECODER
05
IC7408 SDA9088 PIP PROC.
06
IC7600 TDA8417 STEREO DECODER
07
IC7680 TDA8425 SOUND CONTROL
09
IC7430 TDA4680 VIDEO
13
I2C BUS
10
IC7395 TDA8443 RGB CONVERT
11
1160 TUNER/IF
12
IC7137 X2404 XICOR MEMORY
14
IC7258 HEF4094 AUDIO SELECT
15
IC7219 TEA6414 VIDEO SELECT
6281
6280
17
1100 IR-RECEIVER
18
7115 µ-PROC PANEL
20
7115 µ-PROC PANEL
21
IC7137 X2404 MEMORY EMPTY
28
1600 UV916E PIP TUNER/IF
29
IC7630 SAA1300 PIP/TUNER CONTROL
30
7175 PCF8574 16/9 STATUS
31
7001 SAA7280 NICAM DECODER
99
PROTECTION MODE
3202
3444
3446
3203
3610
3608
3686
3684
3425
3426
3399
3398
3165
3164
3135
3136
3257
3256
3603
3602
3631
3630
3468
3467
3026
3027
100
470
10K

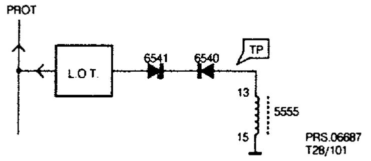
* § 8.3
** § 8.2

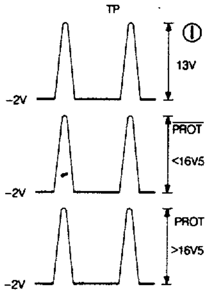
# Protection

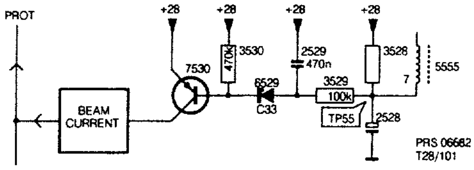

PROT
SOUND
6010
LL4148
7010
2071
33µ
3041
1k5
3040
27k
3044
220
6020
1N4148
3067
1k
+13
2070
6µ8
6000
+15
3007
10k
BC848
7004
BC848
7003
6002
C3V3
6001
C3V3
3029
10k
-15
R
3023
33k
3024
33k
L
surround speakers
3003
33k
TP77
2018
2017
PRS 06679
T28/101



**EHT**

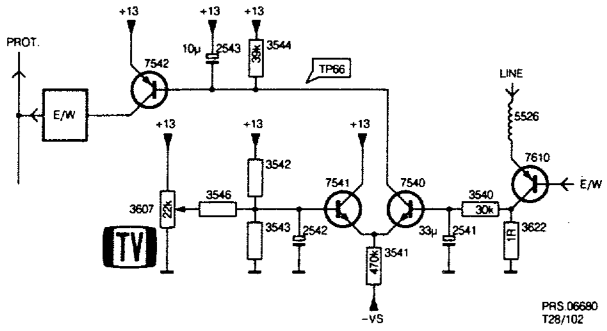

PROT
L.O.T.
6541
6540
TP
13
5555
15
PRS 06687
T28/101

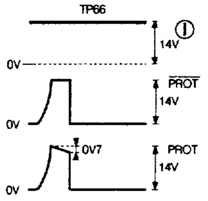


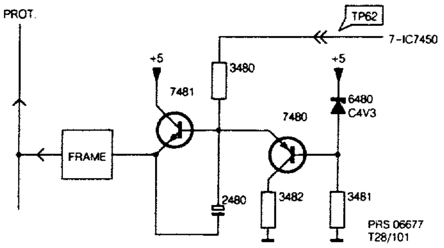

PROT
BEAM CURRENT
+28
7530
+28
470k
3530
+28
2529
470n
+28
3528
5555
7
6529
C33
3529
100k
TP55
2528
PRS 06682
T28/101

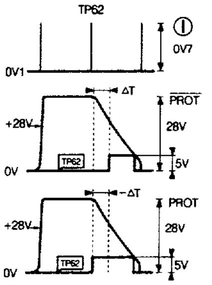
■ PROT

▨ PROT

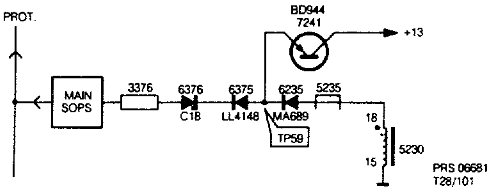

PROT.
E/W
+13
7542
+13
10µ
2543
+13
39k
3544
TP66
LINE
5526
7610
E/W
+13
3607
22k
TV
3546
+13
3542
3543
2542
+13
7541
7540
3541
470k
-VS
3540
30k
33µ
2541
3622
1R
PRS 06680
T28/102

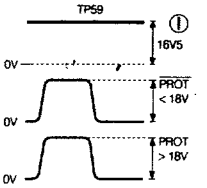



PROT.
TP62
7-IC7450
+5
3480
+5
7481
6480
C4V3
7480
FRAME
2480
3482
3481
PRS 06677
T28/101



**+V**


PROT.
BD944
7241
+13
MAIN SOPS
3376
6376
C18
6375
LL4148
6235
MA689
5235
TP59
18
5230
15
PRS 06681
T28/101



4. S
D

4.1 G
a. O:
sc
b. A\
o>
di
hu
Tr
m
c. Rc
m
ci
sh
m
he
cc
Ne
ca
Si
su

4.2 R
a. He
th
fo
so
so
so
b. W
it
ea
c. Re
m

Caution
a. W
pre
b. W
wit
c. Th
pre
(sc
d. Th

## 4. Servicing of SMDs (Surface Mounted Devices)

### 4.1 General cautions on handling and storage

a. Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.

b. Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity.
The capacitance or resistance value of the SMDs may be affected by this.

c. Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

### 4.2 Removal of SMDs

a. Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 8.1A) or:

b. While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 8.1B).

c. Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 8.1C).

**Caution on removal:**

a. When handling the soldering iron, use suitable pressure and be careful.

b. When removing the chip, do not use undue force with the pair of tweezers.

c. The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250°C).

d. The chip, once removed, must **never** be reused.

### 4.3 Attachment of SMDs

a. Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig. 8.2A).

b. Next complete the soldering of the terminals of the component (see Fig. 8.2B).

**Caution when attaching SMDs:**

a. When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible; care must be taken to avoid damage to the terminals of the SMDs themselves.

b. Keep the SMD's body in contact with the printed board when soldering.

c. The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250°C).

d. Soldering should not be done outside the solder land.

e. Soldering flux (of rosin) may be used, but should not be acidic.

f. After soldering, let the SMD cool down gradually at room temperature.

g. The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 8.3).

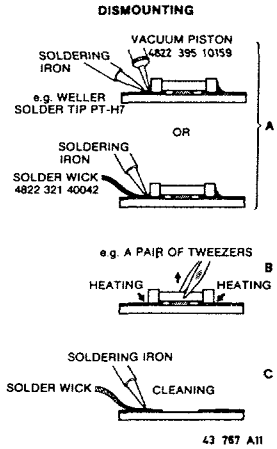

DISMOUNTING
VACUUM PISTON
4822 395 10159
SOLDERING IRON
e.g. WELLER SOLDER TIP PT-H7
OR
A
SOLDERING IRON
SOLDER WICK
4822 321 40042
e.g. A PAIR OF TWEEZERS
B
HEATING
HEATING
SOLDERING IRON
C
SOLDER WICK
CLEANING
43 767 A11

Fig. 8.1

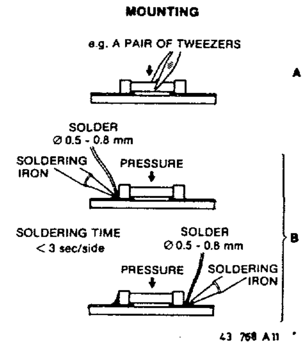

MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
Ø 0.5 - 0.8 mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
< 3 sec/side
SOLDER
Ø 0.5 - 0.8 mm
B
PRESSURE
SOLDERING IRON
43 768 A11

Fig. 8.2

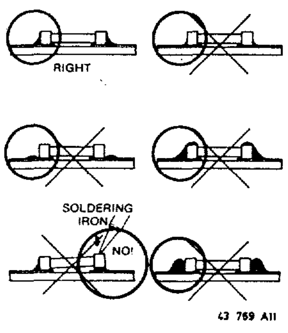
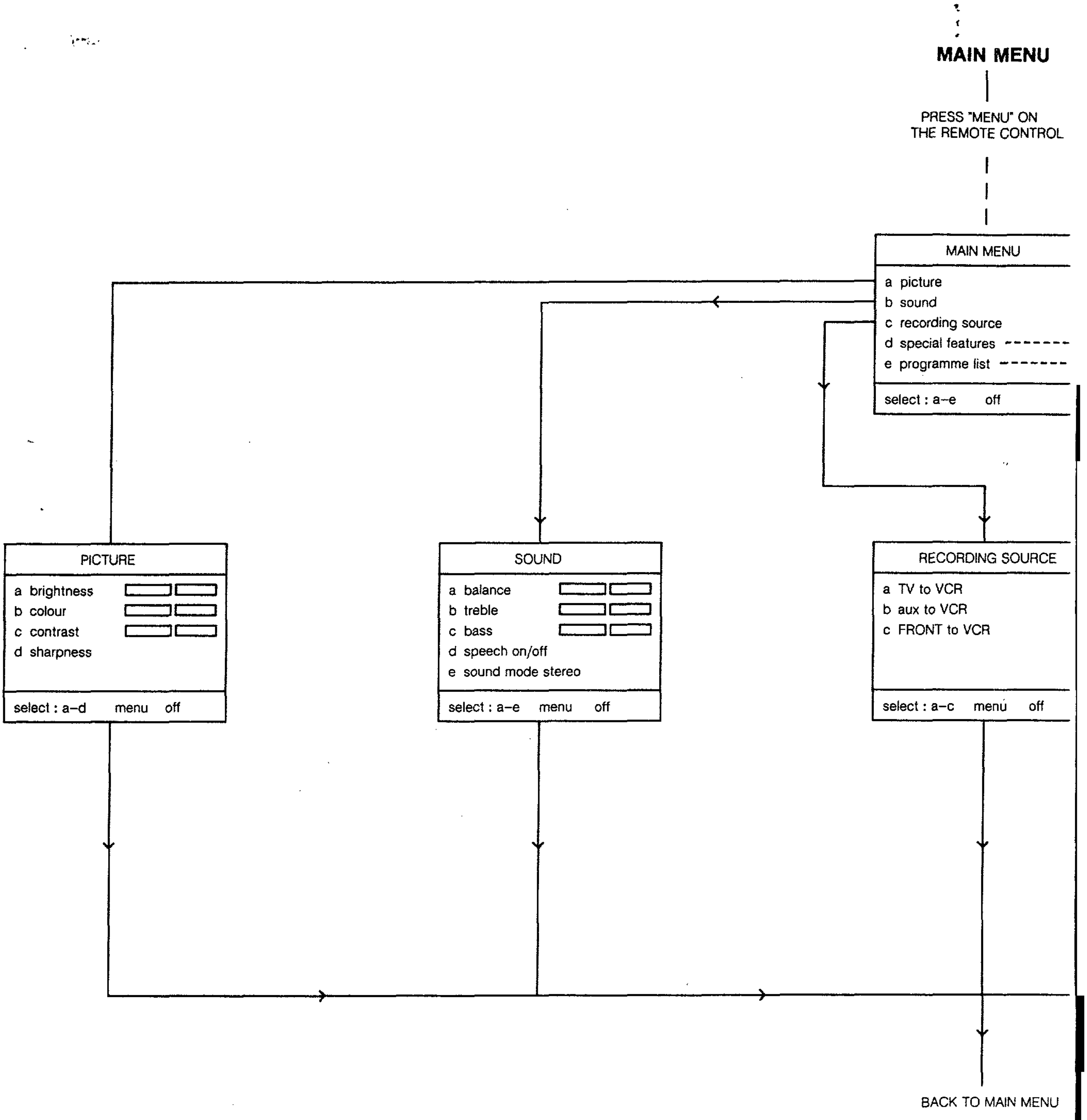
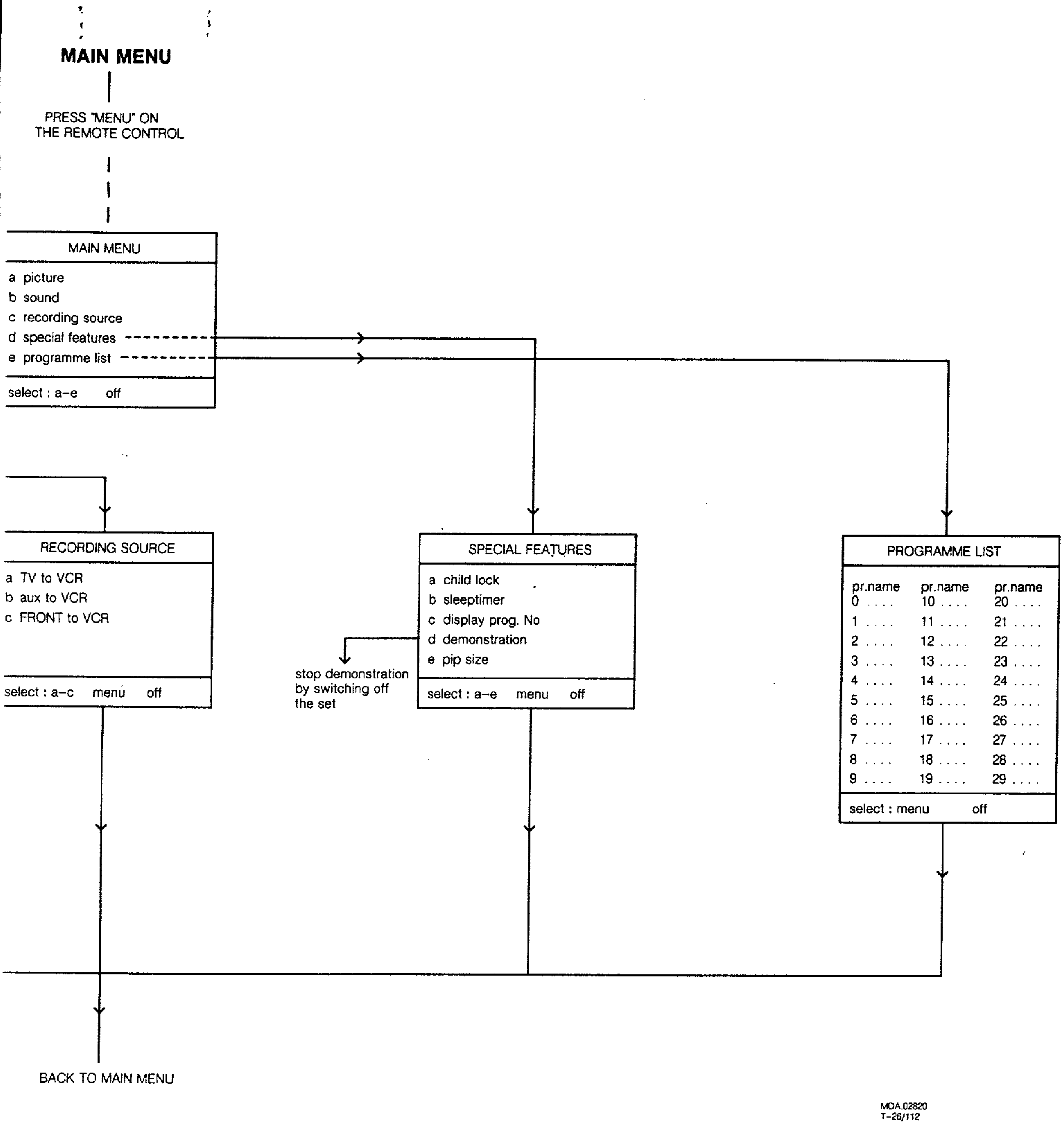

EXAMPLES
RIGHT
SOLDERING IRON
NO!
43 769 A11

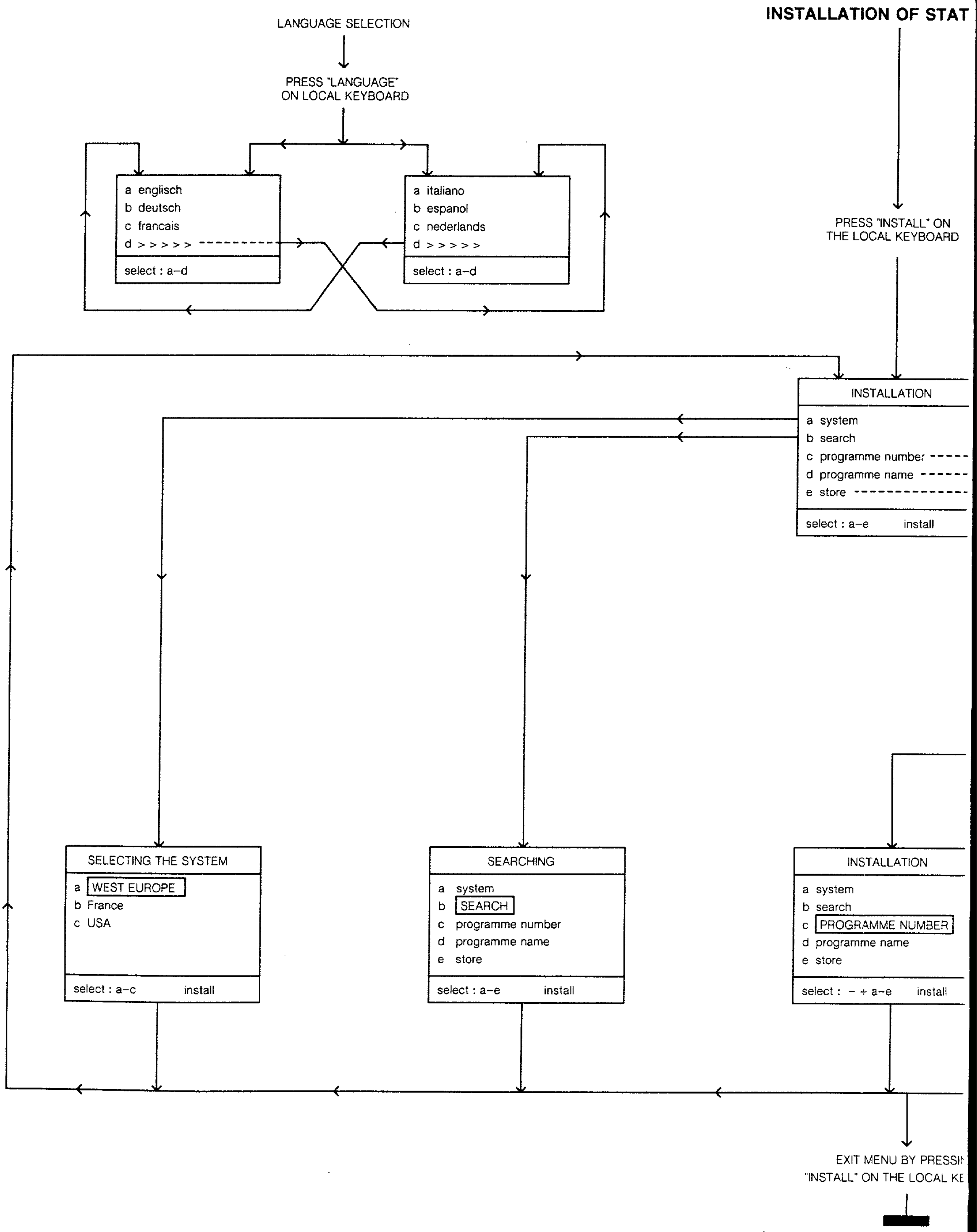
Fig. 8.3

# Survey of menus FL1.1

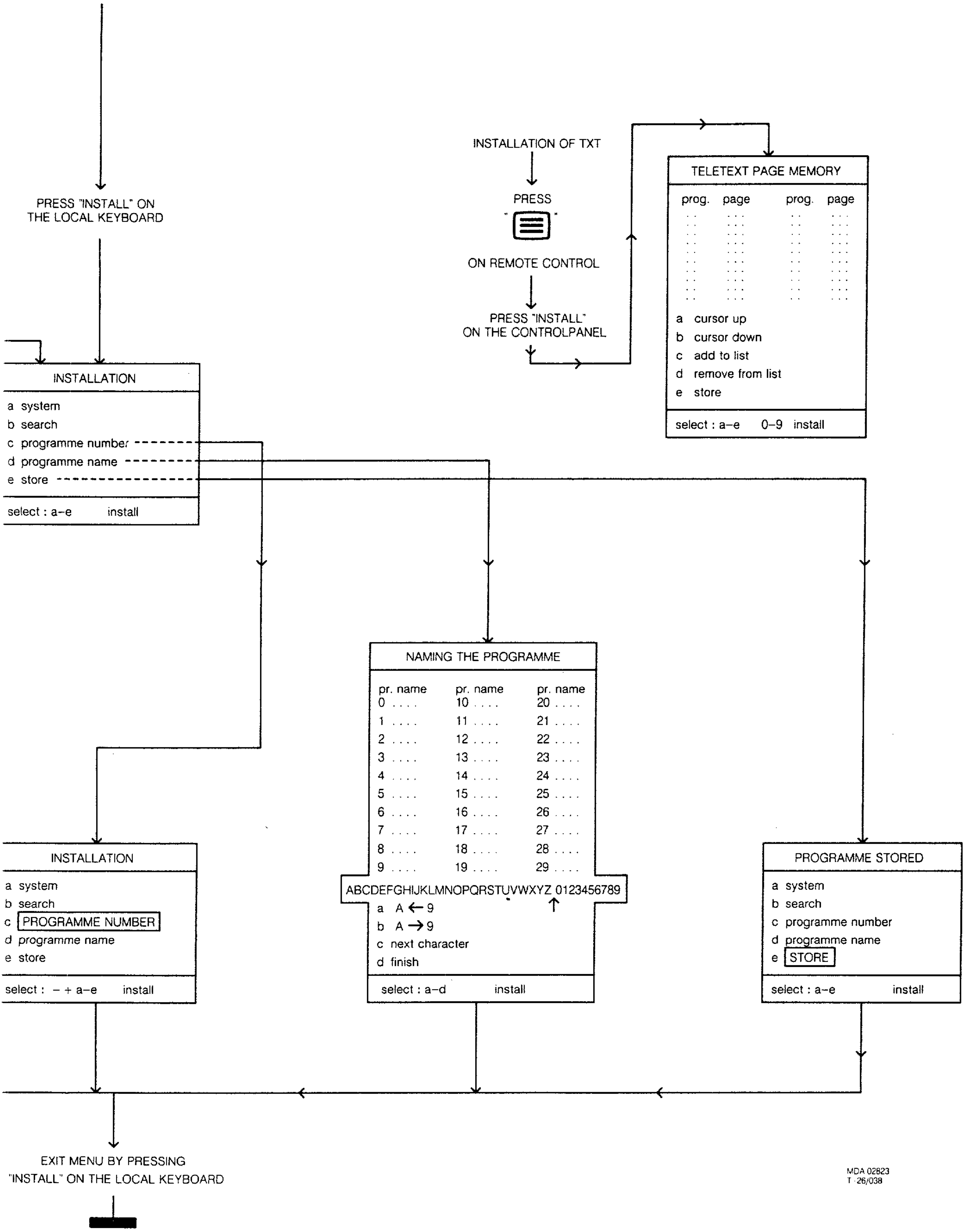

MAIN MENU
PRESS "MENU" ON THE REMOTE CONTROL
MAIN MENU
a picture
b sound
c recording source
d special features
e programme list
select : a–e off
PICTURE
a brightness
b colour
c contrast
d sharpness
select : a–d menu off
SOUND
a balance
b treble
c bass
d speech on/off
e sound mode stereo
select : a–e menu off
RECORDING SOURCE
a TV to VCR
b aux to VCR
c FRONT to VCR
select : a–c menu off
BACK TO MAIN MENU


MAIN MENU
PRESS "MENU" ON THE REMOTE CONTROL
MAIN MENU
a picture
b sound
c recording source
d special features
e programme list
select : a–e off
RECORDING SOURCE
a TV to VCR
b aux to VCR
c FRONT to VCR
select : a–c menu off
SPECIAL FEATURES
a child lock
b sleeptimer
c display prog. No
d demonstration
e pip size
select : a–e menu off
stop demonstration by switching off the set
PROGRAMME LIST
pr.name pr.name pr.name
0 .... 10 .... 20 ....
1 .... 11 .... 21 ....
2 .... 12 .... 22 ....
3 .... 13 .... 23 ....
4 .... 14 .... 24 ....
5 .... 15 .... 25 ....
6 .... 16 .... 26 ....
7 .... 17 .... 27 ....
8 .... 18 .... 28 ....
9 .... 19 .... 29 ....
select : menu off
BACK TO MAIN MENU
MDA 02820
T-26/112

# Survey of menus FL1.1

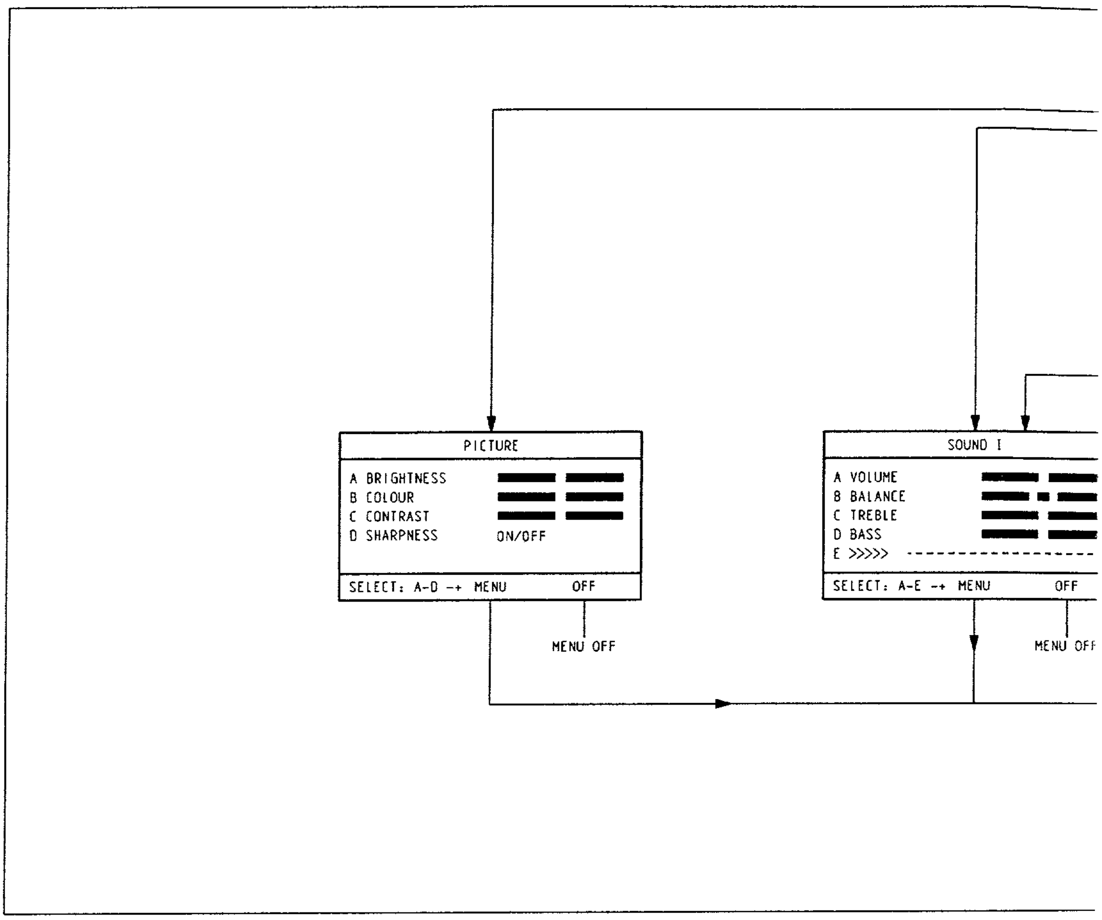

LANGUAGE SELECTION
PRESS "LANGUAGE" ON LOCAL KEYBOARD
a englisch
b deutsch
c francais
d > > > > >
select : a–d
a italiano
b espanol
c nederlands
d > > > > >
select : a–d
INSTALLATION OF STAT
PRESS "INSTALL" ON THE LOCAL KEYBOARD
INSTALLATION
a system
b search
c programme number
d programme name
e store
select : a–e install
SELECTING THE SYSTEM
a WEST EUROPE
b France
c USA
select : a–c install
SEARCHING
a system
b SEARCH
c programme number
d programme name
e store
select : a–e install
INSTALLATION
a system
b search
c PROGRAMME NUMBER
d programme name
e store
select : – + a–e install
EXIT MENU BY PRESSIN
"INSTALL" ON THE LOCAL KE

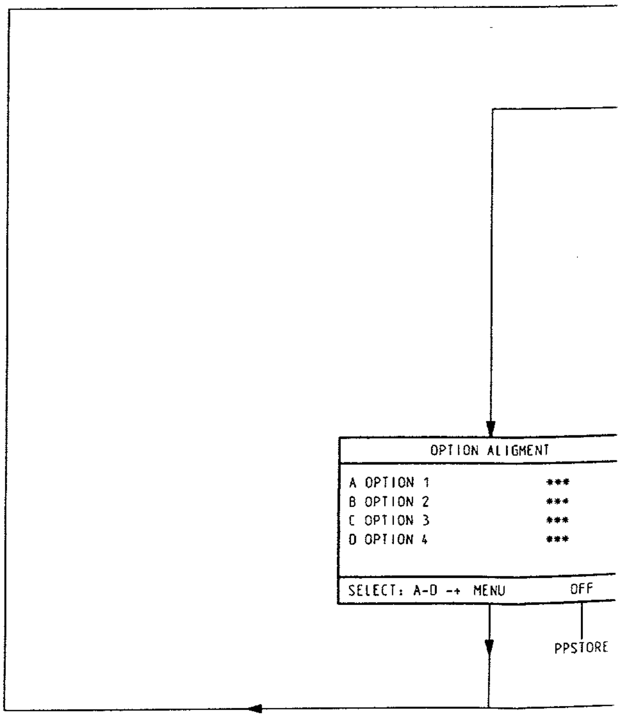
## ALLATION OF STATIONS


PRESS "INSTALL" ON THE LOCAL KEYBOARD
INSTALLATION
a system
b search
c programme number
d programme name
e store
select : a–e install
INSTALLATION OF TXT
PRESS
ON REMOTE CONTROL
PRESS "INSTALL" ON THE CONTROLPANEL
TELETEXT PAGE MEMORY
prog. page prog. page
a cursor up
b cursor down
c add to list
d remove from list
e store
select : a–e 0–9 install
NAMING THE PROGRAMME
pr. name pr. name pr. name
0 .... 10 .... 20 ....
1 .... 11 .... 21 ....
2 .... 12 .... 22 ....
3 .... 13 .... 23 ....
4 .... 14 .... 24 ....
5 .... 15 .... 25 ....
6 .... 16 .... 26 ....
7 .... 17 .... 27 ....
8 .... 18 .... 28 ....
9 .... 19 .... 29 ....
ABCDEFGHIJKLMNOPQRSTUVWXYZ 0123456789
a A ← 9
b A → 9
c next character
d finish
select : a–d install
INSTALLATION
a system
b search
c PROGRAMME NUMBER
d programme name
e store
select : – + a–e install
PROGRAMME STORED
a system
b search
c programme number
d programme name
e STORE
select : a–e install
EXIT MENU BY PRESSING "INSTALL" ON THE LOCAL KEYBOARD

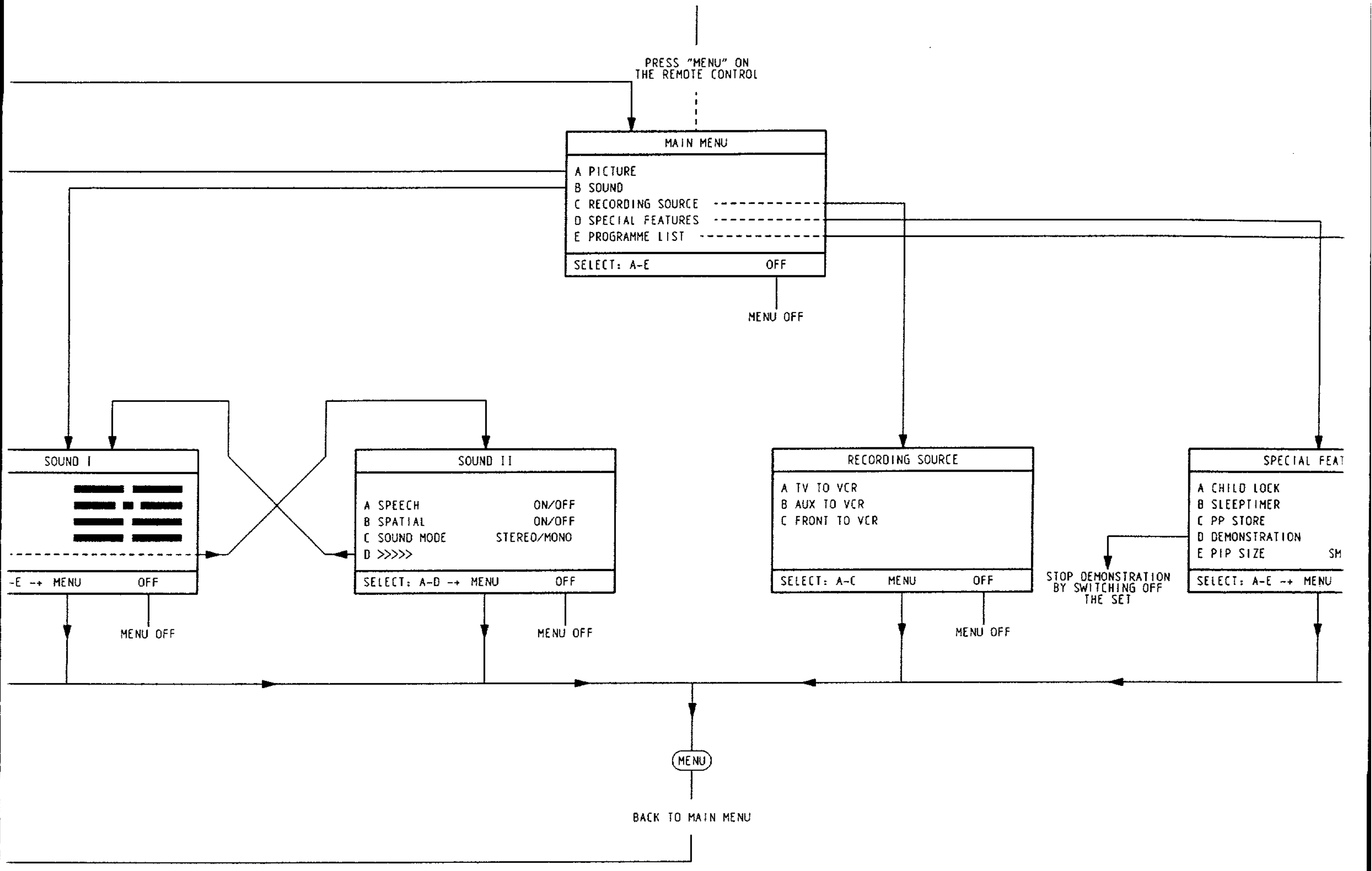
MDA 02823
T 26/038

# Survey of menus FL1.7

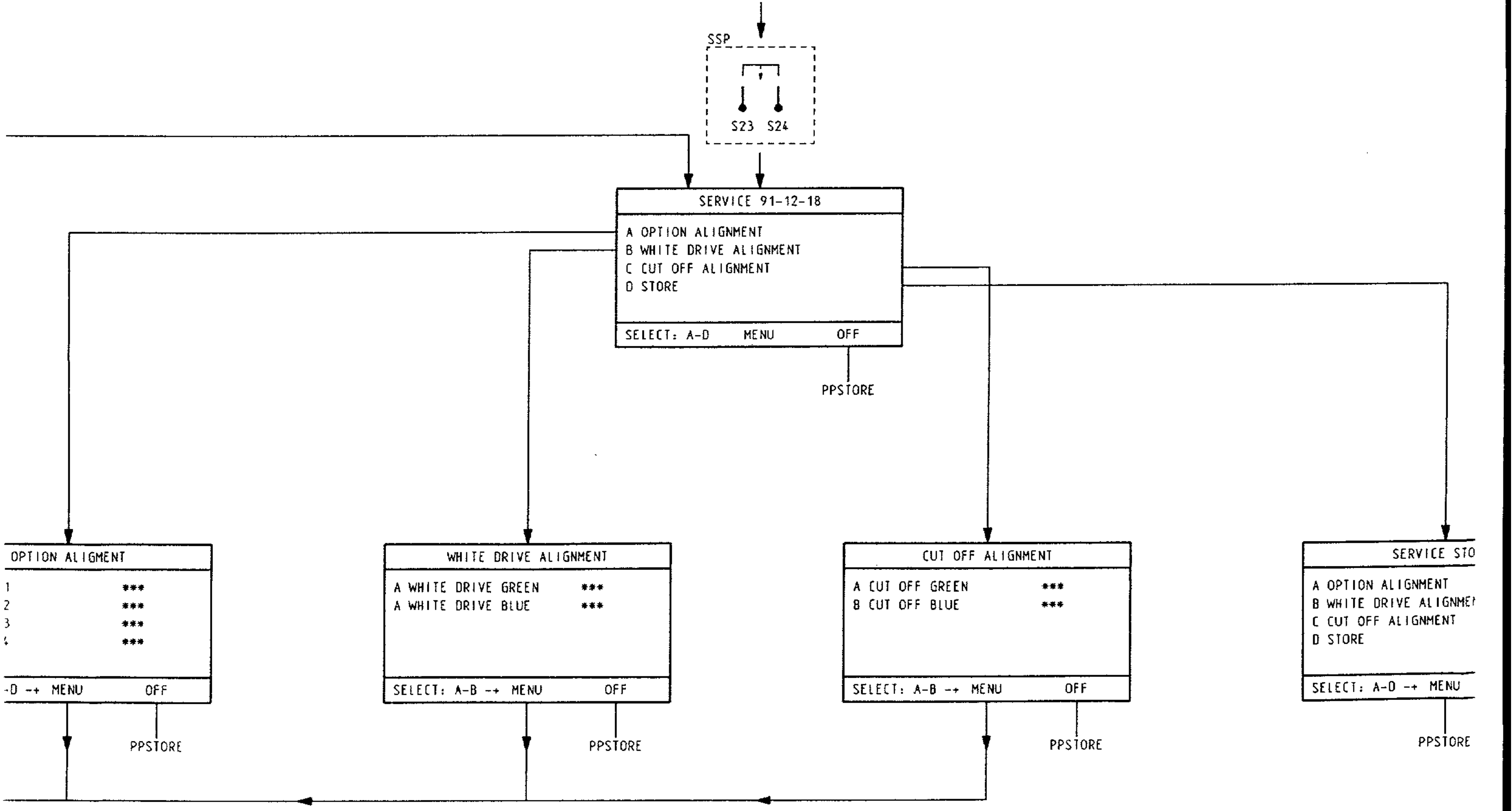

PICTURE
A BRIGHTNESS
B COLOUR
C CONTRAST
D SHARPNESS
ON/OFF
SELECT: A-D -+ MENU
OFF
MENU OFF
SOUND I
A VOLUME
B BALANCE
C TREBLE
D BASS
E >>>>>
SELECT: A-E -+ MENU
OFF
MENU OFF

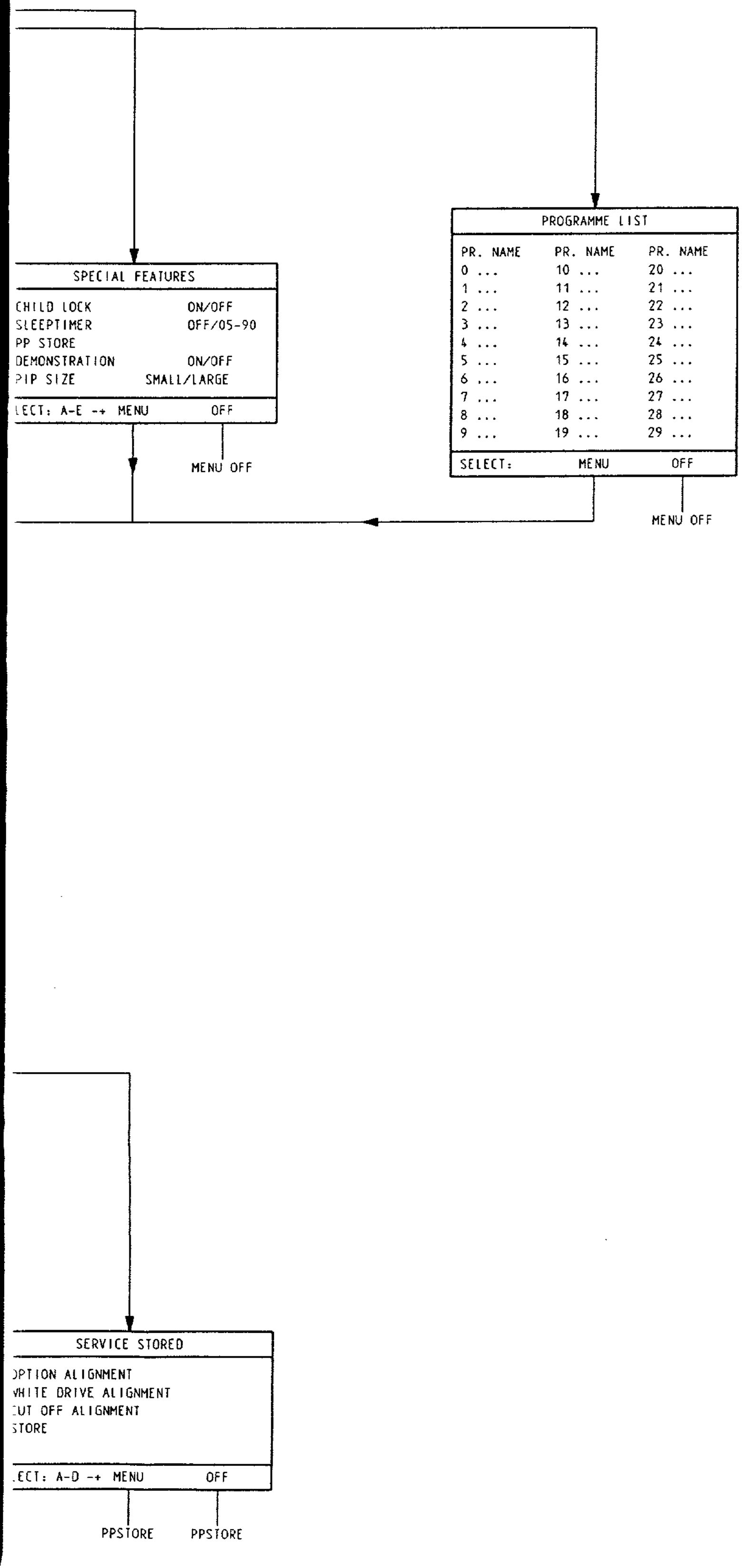

OPTION ALIGMENT
A OPTION 1
***
B OPTION 2
***
C OPTION 3
***
D OPTION 4
***
SELECT: A-D -+ MENU
OFF
PPSTORE

# MAIN MENU

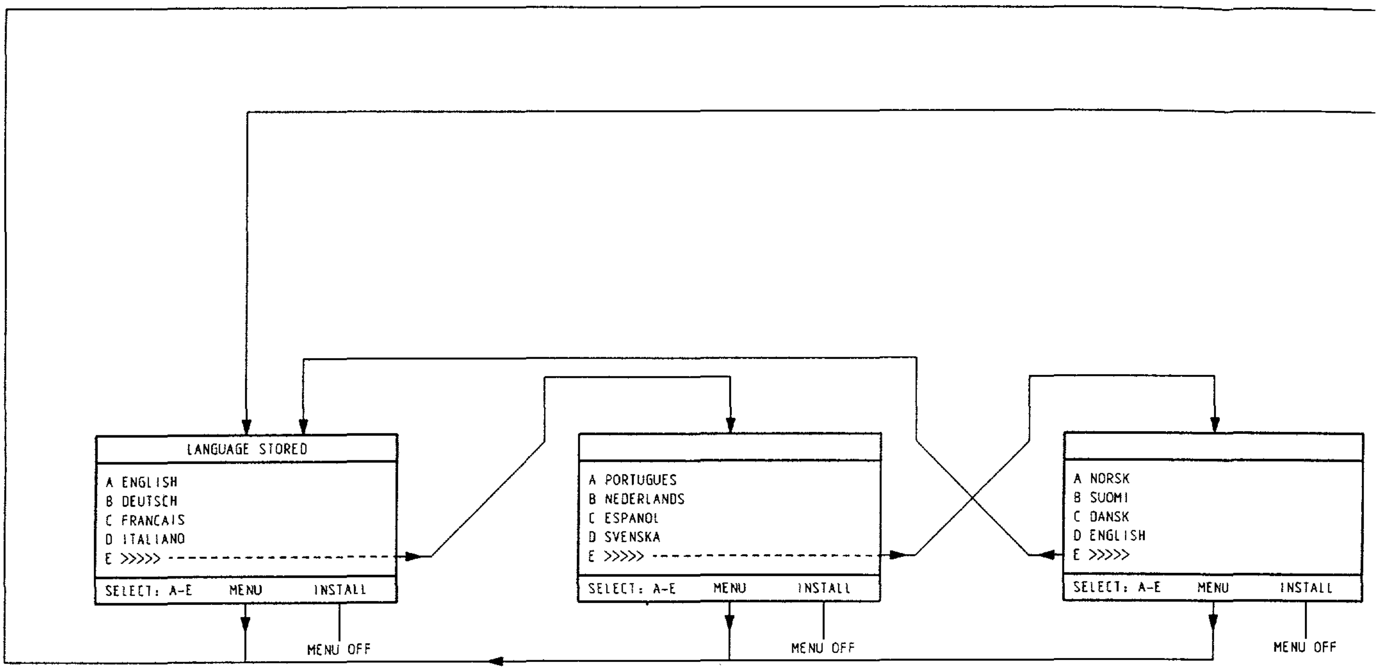

PRESS "MENU" ON
THE REMOTE CONTROL
MAIN MENU
A PICTURE
B SOUND
C RECORDING SOURCE
D SPECIAL FEATURES
E PROGRAMME LIST
SELECT: A-E
OFF
MENU OFF
SOUND I
-E -→ MENU
OFF
MENU OFF
SOUND II
A SPEECH ON/OFF
B SPATIAL ON/OFF
C SOUND MODE STEREO/MONO
D >>>>>
SELECT: A-D -→ MENU
OFF
MENU OFF
RECORDING SOURCE
A TV TO VCR
B AUX TO VCR
C FRONT TO VCR
SELECT: A-C
MENU
OFF
MENU OFF
SPECIAL FEAT
A CHILD LOCK
B SLEEPTIMER
C PP STORE
D DEMONSTRATION
E PIP SIZE
SM
SELECT: A-E -→ MENU
STOP DEMONSTRATION
BY SWITCHING OFF
THE SET
MENU
BACK TO MAIN MENU

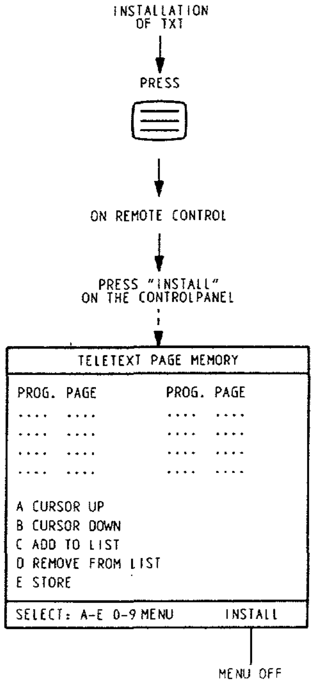
# SERVICE MENU


SSP
S23
S24
SERVICE 91-12-18
A OPTION ALIGNMENT
B WHITE DRIVE ALIGNMENT
C CUT OFF ALIGNMENT
D STORE
SELECT: A-D
MENU
OFF
PPSTORE
OPTION ALIGMENT
1 ***
2 ***
3 ***
4 ***
-D -→ MENU
OFF
PPSTORE
WHITE DRIVE ALIGNMENT
A WHITE DRIVE GREEN ***
A WHITE DRIVE BLUE ***
SELECT: A-B -→ MENU
OFF
PPSTORE
CUT OFF ALIGNMENT
A CUT OFF GREEN ***
B CUT OFF BLUE ***
SELECT: A-B -→ MENU
OFF
PPSTORE
SERVICE STO
A OPTION ALIGNMENT
B WHITE DRIVE ALIGNME
C CUT OFF ALIGNMENT
D STORE
SELECT: A-D -→ MENU
PPSTORE

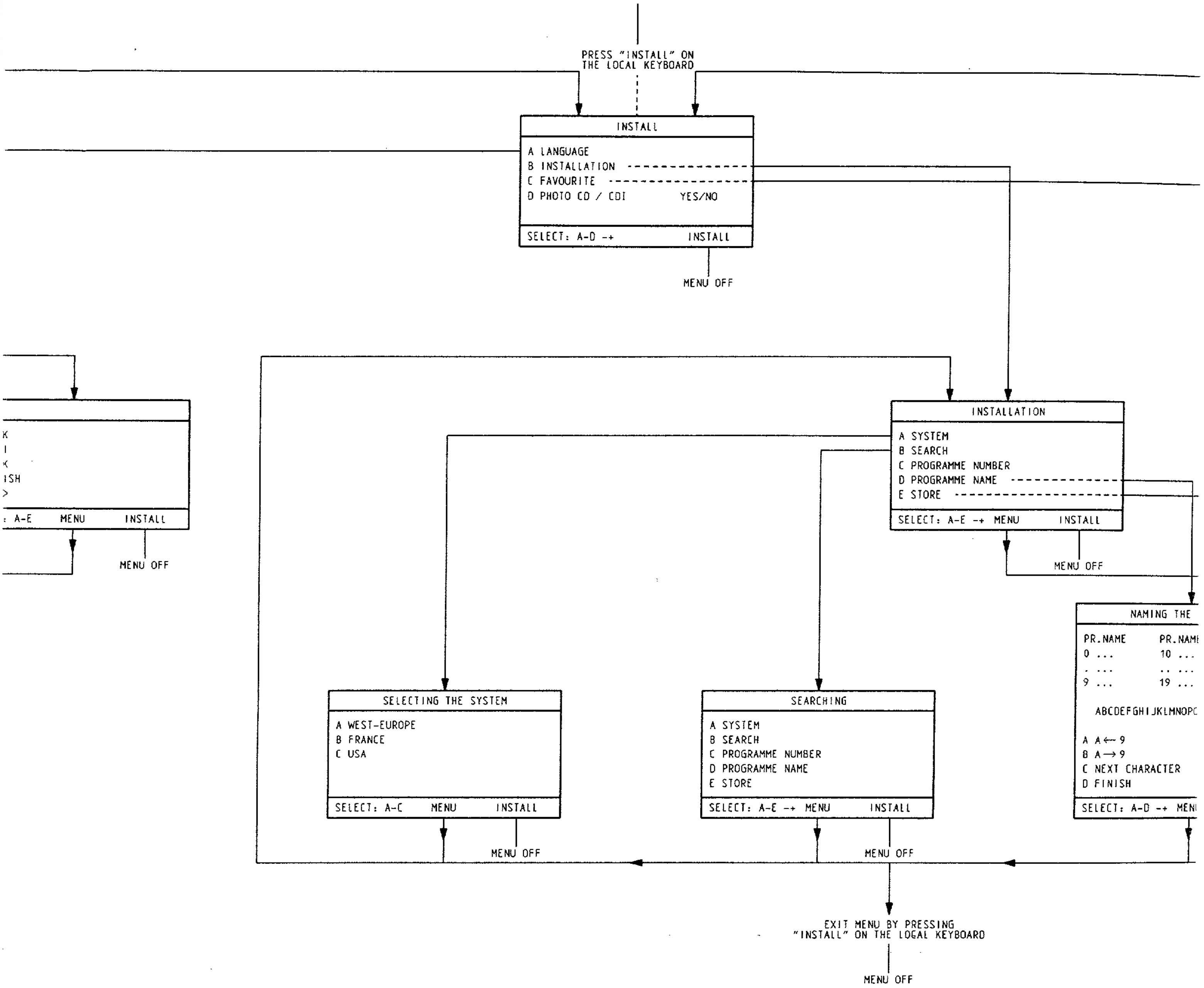

SPECIAL FEATURES
CHILD LOCK ON/OFF
SLEEPTIMER OFF/05-90
PP STORE
DEMONSTRATION ON/OFF
PIP SIZE SMALL/LARGE
LECT: A-E -+ MENU OFF
MENU OFF
PROGRAMME LIST
PR. NAME PR. NAME PR. NAME
0 ... 10 ... 20 ...
1 ... 11 ... 21 ...
2 ... 12 ... 22 ...
3 ... 13 ... 23 ...
4 ... 14 ... 24 ...
5 ... 15 ... 25 ...
6 ... 16 ... 26 ...
7 ... 17 ... 27 ...
8 ... 18 ... 28 ...
9 ... 19 ... 29 ...
SELECT: MENU OFF
MENU OFF
SERVICE STORED
OPTION ALIGNMENT
WHITE DRIVE ALIGNMENT
CUT OFF ALIGNMENT
STORE
LECT: A-D -+ MENU OFF
PPSTORE
PPSTORE

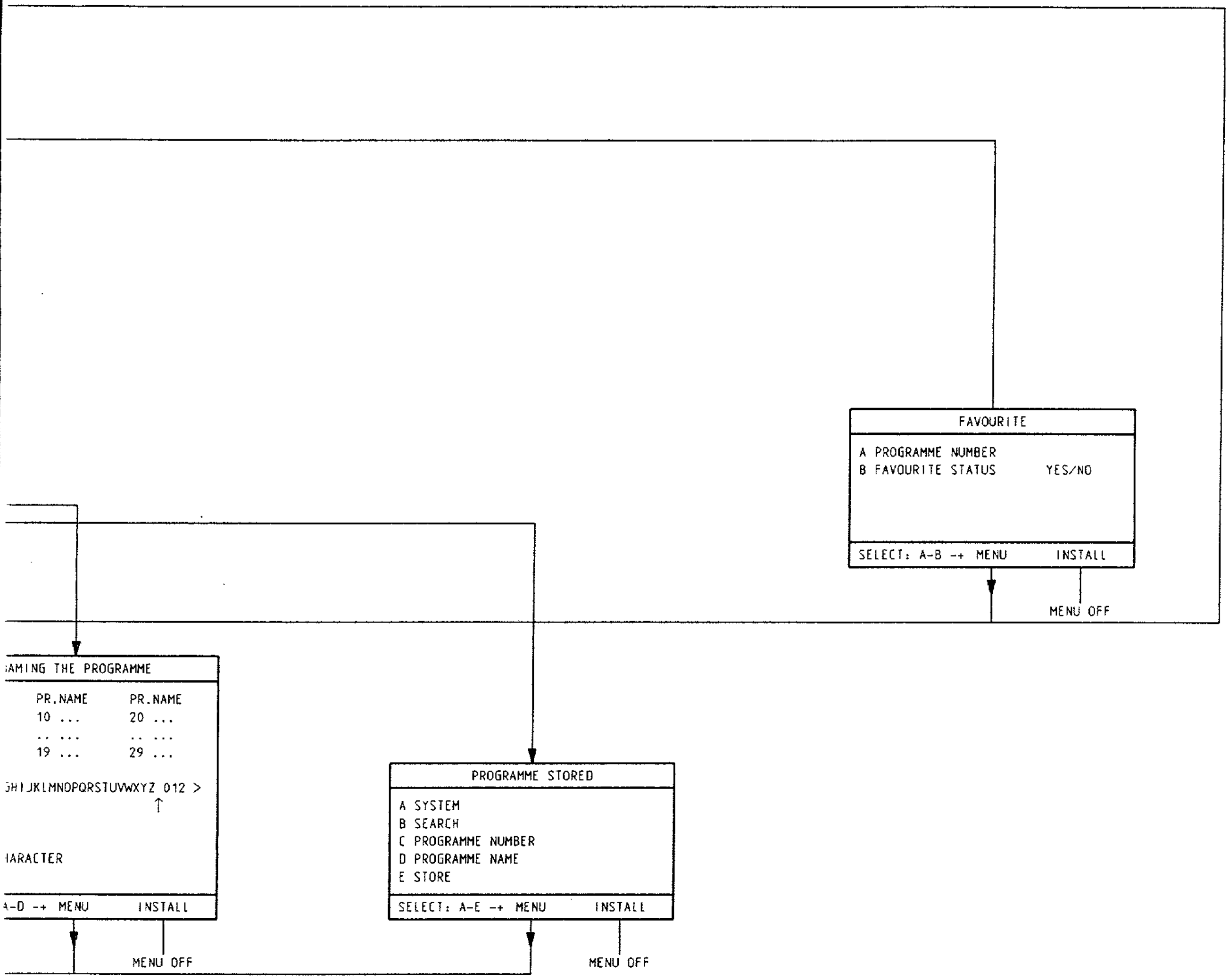
# 9.8 CHASSIS FL1.1 Survey of menus FL1.7


LANGUAGE STORED
A ENGLISH
B DEUTSCH
C FRANCAIS
D ITALIANO
E >>>>>
SELECT: A-E MENU INSTALL
MENU OFF
A PORTUGUES
B NEDERLANDS
C ESPANOL
D SVENSKA
E >>>>>
SELECT: A-E MENU INSTALL
MENU OFF
A NORSK
B SUOMI
C DANSK
D ENGLISH
E >>>>>
SELECT: A-E MENU INSTALL
MENU OFF


INSTALLATION OF TXT
PRESS
ON REMOTE CONTROL
PRESS "INSTALL" ON THE CONTROLPANEL
TELETEXT PAGE MEMORY
PROG. PAGE PROG. PAGE
A CURSOR UP
B CURSOR DOWN
C ADD TO LIST
D REMOVE FROM LIST
E STORE
SELECT: A-E 0-9 MENU INSTALL
MENU OFF

# INSTALLATION OF STATIONS


PRESS "INSTALL" ON THE LOCAL KEYBOARD
INSTALL
A LANGUAGE
B INSTALLATION
C FAVOURITE
D PHOTO CD / CDI YES/NO
SELECT: A-D -+ INSTALL
MENU OFF
K
I
K
ISH
>
: A-E MENU INSTALL
MENU OFF
INSTALLATION
A SYSTEM
B SEARCH
C PROGRAMME NUMBER
D PROGRAMME NAME
E STORE
SELECT: A-E -+ MENU INSTALL
MENU OFF
NAMING THE
PR.NAME PR.NAM
0 ... 10 ...
. ... .. ...
9 ... 19 ...
ABCDEFGHIJKLMNOPC
A A← 9
B A→ 9
C NEXT CHARACTER
D FINISH
SELECT: A-D -+ MEN
SELECTING THE SYSTEM
A WEST-EUROPE
B FRANCE
C USA
SELECT: A-C MENU INSTALL
MENU OFF
SEARCHING
A SYSTEM
B SEARCH
C PROGRAMME NUMBER
D PROGRAMME NAME
E STORE
SELECT: A-E -+ MENU INSTALL
MENU OFF
EXIT MENU BY PRESSING "INSTALL" ON THE LOCAL KEYBOARD
MENU OFF


FAVOURITE
A PROGRAMME NUMBER
B FAVOURITE STATUS YES/NO
SELECT: A-B -+ MENU
INSTALL
MENU OFF
AMING THE PROGRAMME
PR.NAME
PR.NAME
10 ...
20 ...
.. ...
.. ...
19 ...
29 ...
GHIJKLMNOPQRSTUVWXYZ 012 >
HARACTER
A-D -+ MENU
INSTALL
MENU OFF
PROGRAMME STORED
A SYSTEM
B SEARCH
C PROGRAMME NUMBER
D PROGRAMME NAME
E STORE
SELECT: A-E -+ MENU
INSTALL
MENU OFF

# Spare parts list / Stückliste / Liste

## Large signal panel A B G

**Connectors**

| | |
|---|---|
| 4822 265 30525 | 2P male grey |
| 4822 265 20541 | 2P male black |
| 4822 265 40469 | 6P female gold |
| 4822 265 40472 | 10P female gold |
| 4822 290 40295 | 7P male |
| 4822 265 40818 | 8P male |
| 4822 267 40985 | 6P male |
| 4822 264 40207 | 3P male |
| 4822 265 30389 | 2P male |
| 4822 265 40596 | 2P male |
| 4822 265 20512 | 2P male green |
| 4822 267 50591 | 6P male gold |
| 4822 264 50149 | 10P male gold |

**Various parts**

| | | |
|---|---|---|
| | 4822 255 40527 | insulating plate |
| | 4822 492 70143 | spring 10 X 33MM |
| | 4822 492 62076 | spring fix transistor |
| | 4822 492 70788 | spring fix IC |
| | 4822 492 70789 | spring fix transistor |
| | 4822 276 12998 | mains switch |
| | 4822 256 30274 | fuse holder |
| | 4822 290 60812 | socket for ext. loudspeakers |
| | 4822 267 20417 | socket for squeeters |
| | 4822 276 13094 | switch loudsp. ON/OFF |
| | 4822 320 11086 | focus cable |
| | 4822 320 20162 | EHT cable |
| | 4822 212 23749 | SOPS CONTROL |
| | 4822 310 81919 | SOPS repair kit |
| 1010 | 4822 212 23892 | NTSC ASSY |
| 1200 | 4822 070 33152 | fuse T3,15A |
| 1250 | 4822 071 52501 | fuse T0,25A |

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| | | |
|---|---|---|
| 2000 | 4822 122 31773 | 560pF 5% 50V |
| 2001 | 4822 122 31784 | 4,7nF 10% 50V |
| 2002 | 4822 122 31784 | 4,7nF 10% 50V |
| 2003 | 4822 126 11175 | 22pF 5% 50V |
| 2004 | 4822 122 32142 | 270pF 5% 63V |
| 2005 | 4822 122 32142 | 270pF 5% 63V |
| 2007 | 4822 122 31797 | 22nF 10% 63V |
| 2008 | 4822 122 31797 | 22nF 10% 63V |
| 2009 | 4822 126 11175 | 22pF 5% 50V |
| 2011 | 4822 122 31775 | 680pF 5% 50V |
| 2012 | 4822 122 32927 | 220nF |
| 2013 | 4822 122 32927 | 220nF |
| 2015 | 4822 124 42109 | 22µF 10% 50V |
| 2016 | 4822 124 42109 | 22µF 10% 50V |
| 2018 | 4822 122 31797 | 22nF 10% 63V |
| 2019 | 4822 122 31414 | 10nF 100V |
| 2020 | 4822 122 31414 | 10nF 100V |
| 2021 | 4822 122 31414 | 10nF 100V |
| 2022 | 4822 122 31414 | 10nF 100V |
| 2023 | 5322 122 33446 | 3,3nF 10% 63V |
| 2024 | 5322 122 33446 | 3,3nF 10% 63V |
| 2025 | 4822 122 10166 | 22nF 30% 16V |
| 2026 | 4822 122 32927 | 220nF |
| 2027 | 4822 122 32927 | 220nF |
| 2028 | 4822 122 32927 | 220nF |
| 2029 | 4822 122 32927 | 220nF |
| 2030 | 4822 126 11175 | 22pF 5% 50V |
| 2031 | 4822 126 11175 | 22pF 5% 50V |

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| | | |
|---|---|---|
| 2032 | 4822 122 31797 | 22nF 10% 63V |
| 2033 | 4822 122 10166 | 22nF 30% 16V |
| 2035 | 4822 122 31775 | 680pF 5% 50V |
| 2038 | 4822 122 31644 | 2,2nF 10% 63V |
| 2040 | 4822 122 32927 | 220nF |
| 2041 | 4822 122 32927 | 220nF |
| 2043 | 4822 122 32927 | 220nF |
| 2045 | 4822 122 32927 | 220nF |
| 2046 | 4822 122 32927 | 220nF |
| 2047 | 4822 122 32927 | 220nF |
| 2050 | 4822 124 42362 | 33µF 20% 16V |
| 2051 | 4822 124 42362 | 33µF 20% 16V |
| 2052 | 4822 124 42362 | 33µF 20% 16V |
| 2053 | 4822 124 42362 | 33µF 20% 16V |
| 2056 | 4822 122 31773 | 560pF 5% 50V |
| 2057 | 4822 122 31773 | 560pF 5% 50V |
| 2058 | 4822 122 31773 | 560pF 5% 50V |
| 2059 | 4822 122 31773 | 560pF 5% 50V |
| 2060 | 4822 122 31773 | 560pF 5% 50V |
| 2061 | 4822 122 31773 | 560pF 5% 50V |
| 2065 | 4822 126 11156 | 684nF 20% |
| 2066 | 4822 126 11156 | 684nF 20% |
| 2070 | 4822 124 40272 | 33µF 20% 16V |
| 2071 | 4822 124 42184 | 33µF 20% 25V |
| 2072 | 4822 124 41584 | 100µF 20% 10V |
| 2073 | 4822 124 21212 | 15µF 20% 40V |
| 2074 | 5322 122 31647 | 1nF 10% 63V |
| 2200 | 4822 121 43819 | 680nF 10% 250V |
| 2203 | 4822 121 40487 | 100nF 10% 400V |
| 2210 | 4822 126 11141 | 2,2nF 10% 1kV |
| 2211 | 4822 126 11141 | 2,2nF 10% 1kV |
| 2214 | 4822 124 23492 | 220µF 50% 385V |
| 2215 | 4822 122 33665 | 3,3nF 20% 125V |
| 2216 | 4822 126 10202 | 1,5nF 10% 2kV |
| 2230 | 4822 122 31784 | 4,7nF 10% 50V |
| 2231 | 4822 126 11157 | 470pF 10% 500V |
| 2232 | 4822 124 40738 | 330µF 20% 25V |
| 2233 | 4822 126 11157 | 470pF 10% 500V |
| 2234 | 4822 124 40738 | 330µF 20% 25V |
| 2235 | 4822 126 11157 | 470pF 10% 500V |
| 2237 | 4822 122 33708 | 2,2nF 10% 1kV |
| 2238 | 4822 124 22583 | 47µF 160V |
| 2239 | 4822 124 40193 | 68µF 20% 16V |
| 2240 | 4822 124 42183 | 1000µF 20% 63V |
| 2254 | 4822 126 11496 | 120pF 5% 2kV |
| 2255 | 4822 122 32142 | 270pF 5% 63V |
| 2258 | 5322 121 42502 | 390nF 5% 63V |
| 2260 | 4822 122 31727 | 470pF 5% 63V |
| 2261 | 5322 124 21189 | 100µF 20% 40V |
| 2262 | 4822 122 31727 | 470pF 5% 63V |
| 2263 | 4822 124 40849 | 330µF 20% 16V |
| 2270 | 4822 124 41584 | 100µF 20% 10V |
| 2272 | 4822 122 33496 | 100nF 10% 63V |
| 2302 | 4822 122 31765 | 100pF 5% 50V |
| 2303 | 4822 122 31808 | 150pF 10% 50V |
| 2308 | 4822 122 32891 | 68nF 10% 63V |
| 2321 | 4822 121 51319 | 1µF 10% 63V |
| 2331 | 4822 122 32891 | 68nF 10% 63V |
| 2351 | 4822 121 41854 | 150nF 5% 63V |
| 2360 | 4822 122 31981 | 33nF ±0,5pF 50V |
| 2361 | 4822 121 42589 | 82nF 5% 63V |
| 2365 | 5322 122 32838 | 82nF 10% 63V |
| 2372 | 5322 121 42502 | 390nF 5% 63V |
| 2376 | 4822 124 40272 | 33µF 20% 16V |
| 2380 | 4822 122 33496 | 100nF 10% 63V |
| 2381 | 4822 122 33496 | 100nF 10% 63V |
| 2382 | 4822 122 33496 | 100nF 10% 63V |
| 2386 | 5322 122 31647 | 1nF 10% 63V |

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| | | |
|---|---|---|
| 2401 | 4822 122 32542 | 47nF 10% 63V |
| 2402 | 4822 124 41576 | 2,2µF 20% 50V |
| 2403 | 5322 124 41431 | 22µF 20% 35V |
| 2404 | 4822 124 41577 | 4,7µF 20% 50V |
| 2405 | 4822 122 32542 | 47nF 10% 63V |
| 2406 | 4822 121 51091 | 1,2nF 2% 250V |
| 2407 | 4822 122 32153 | 1,8nF 10% 63V |
| 2408 | 4822 122 31168 | 270pF 10% 500V |
| 2409 | 4822 122 31797 | 22nF 10% 63V |
| 2410 | 4822 121 41854 | 150nF 5% 63V |
| 2411 | 4822 121 41854 | 150nF 5% 63V |
| 2412 | 4822 122 31211 | 100pF 10% 500V |
| 2415 | 4822 122 32542 | 47nF 10% 63V |
| 2416 | 4822 122 33496 | 100nF 10% 63V |
| 2417 | 4822 122 32808 | 1,2nF 10% 63V |
| 2418 | 4822 122 31797 | 22nF 10% 63V |
| 2419 | 4822 124 40849 | 330µF 20% 16V |
| 2450 | 4822 122 32442 | 10nF 50V |
| 2451 | 4822 122 31746 | 1000pF 5% 50V |
| 2452 | 4822 124 41716 | 220µF 20% 35V |
| 2455 | 4822 122 31771 | 390pF 5% 50V |
| 2456 | 4822 124 41334 | 470µF 20% 35V |
| 2456 | 4822 124 41747 | 680µF 20% |
| 2457 | 4822 124 42251 | 1,5µF 10% 50V |
| 2458 | 4822 122 31797 | 22nF 10% 63V |
| 2459 | 4822 122 32891 | 68nF 10% 63V |
| 2460 | 4822 122 33496 | 100nF 10% 63V |
| 2480 | 4822 124 23495 | 10µF 20% 25V |
| 2501 | 4822 122 31961 | 68pF 5% 63V |
| 2502 | 4822 121 41689 | 100nF 10% 250V |
| 2503 | 4822 126 11157 | 470pF 10% 500V |
| 2504 | 4822 126 11495 | 1nF 10% 2kV |
| 2504 | 4822 126 11539 | 1,2nF 10% 2kV |
| 2504 | 4822 126 11495 | 1nF 10% 2kV |
| 2509 | 4822 122 31171 | 1,2nF 10% 500V |
| 2511 | 4822 124 41739 | 47µF 20% 160V |
| 2512 | 4822 124 40435 | 10µF 20% 50V |
| 2513 | 4822 124 40435 | 10µF 20% 50V |
| 2517 | 4822 122 31177 | 470pF 10% 500V |
| 2518 | 4822 124 22449 | 4,7µF 30% 350V |
| 2519 | 4822 124 41831 | 1µF 20% 160V |
| 2520 | 4822 121 51528 | 470nF 5% 250V |
| 2521 | 4822 121 51563 | 560nF 5% 250V |
| 2523 | 5322 121 42523 | 8,2nF 5% 2kV |
| 2524 | 4822 121 43915 | 27nF 5% 630V |
| 2529 | 4822 124 23491 | 0,47µF 20% 50V |
| 2530 | 4822 122 31797 | 22nF 10% 63V |
| 2531 | 4822 121 40516 | 22nF 10% 250V |
| 2533 | 5322 122 32818 | 2,2nF 10% 100V |
| 2534 | 4822 126 11502 | 470pF 10% 500V |
| 2535 | 4822 124 23488 | 1000µF 20% 35V |
| 2536 | 4822 122 31177 | 470pF 10% 500V |
| 2537 | 4822 124 40184 | 1000µF 20% 10V |
| 2541 | 4822 124 42184 | 33µF 20% 25V |
| 2542 | 4822 124 22466 | 1µF 20% 50V |
| 2543 | 4822 124 23495 | 10µF 20% 25V |
| 2546 | 4822 122 33496 | 100nF 10% 63V |
| 2547 | 4822 122 33498 | 2,7nF 10% 63V |
| 2551 | 4822 124 40195 | 150µF 20% 16V |
| 2600 | 4822 124 41577 | 4,7µF 20% 50V |
| 2601 | 4822 122 31797 | 22nF 10% 63V |
| 2603 | 4822 122 32891 | 68nF 10% 63V |
| 2603 | 4822 122 32542 | 47nF 10% 63V |
| 2603 | 4822 122 33496 | 100nF 10% 63V |
| 2605 | 4822 122 31781 | 1500pF 10% 50V |
| 2605 | 4822 122 33498 | 2,7nF 10% 63V |
| 2606 | 4822 122 33496 | 100nF 10% 63V |
| 2609 | 4822 121 43396 | 120nF 5% 63V |

# Spare parts list / Stückliste / Liste

## Large signal panel A B G

-||-

| | | |
|---|---|---|
| 2610 | 4822 124 41576 | 2,2μF 20% 50V |
| 2611 | 4822 124 41576 | 2,2μF 20% 50V |
| 2613 | 4822 122 31784 | 4,7nF 10% 50V |
| 2613 | 4822 122 31773 | 560pF 5% 50V |

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| | | |
|---|---|---|
| 3000 | 4822 051 10912 | 9k1 2% 0,25W |
| 3001 | 4822 051 10912 | 9k1 2% 0,25W |
| 3004 | 4822 051 10104 | 100k 2% 0,25W |
| 3005 | 4822 051 10104 | 100k 2% 0,25W |
| 3006 | 4822 051 10224 | 220k 2% 0,25W |
| 3009 | 4822 051 10224 | 220k 2% 0,25W |
| 3011 | 4822 051 10203 | 20k 2% 0,25W |
| 3012 | 4822 051 10203 | 20k 2% 0,25W |
| 3013 | 4822 116 52268 | 300k 5% 0,5W |
| 3014 | 4822 116 52268 | 300k 5% 0,5W |
| 3016 | 4822 052 10828 | 8Ω2 5% 0,33W |
| 3021 | 4822 052 10828 | 8Ω2 5% 0,33W |
| 3022 | 4822 052 10828 | 8Ω2 5% 0,33W |
| 3025 | 4822 051 10333 | 33k 2% 0,25W |
| 3027 | 4822 051 10103 | 10k 2% 0,25W |
| 3028 | 4822 051 10103 | 10k 2% 0,25W |
| 3029 | 4822 051 10123 | 12k 2% 0,25W |
| 3030 | 4822 051 10123 | 12k 2% 0,25W |
| 3031 | 4822 051 10102 | 1k 2% 0,25W |
| 3032 | 4822 051 10102 | 1k 2% 0,25W |
| 3033 | 4822 116 52244 | 15k 5% 0,5W |
| 3034 | 4822 051 10472 | 4k7 2% 0,25W |
| 3035 | 4822 051 10153 | 15k 2% 0,25W |
| 3036 | 4822 051 10152 | 1k5 2% 0,25W |
| 3037 | 4822 051 10152 | 1k5 2% 0,25W |
| 3040 | 4822 051 10273 | 27k 2% 0,25W |
| 3041 | 4822 051 10152 | 1k5 2% 0,25W |
| 3043 | 4822 051 10203 | 20k 2% 0,25W |
| 3044 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3049 | 4822 051 10102 | 1k 2% 0,25W |
| 3050 | 4822 051 10103 | 10k 2% 0,25W |
| 3051 | 4822 051 10203 | 20k 2% 0,25W |
| 3052 | 4822 051 10472 | 4k7 2% 0,25W |
| 3053 | 4822 051 10472 | 4k7 2% 0,25W |
| 3054 | 4822 053 21475 | 4M7 5% 0,5W |
| 3060 | 4822 051 10203 | 20k 2% 0,25W |
| 3065 | 4822 051 10183 | 18k 2% 0,25W |
| 3066 | 4822 051 10183 | 18k 2% 0,25W |
| 3067 | 4822 116 52296 | 6k8 5% 0,5W |
| 3068 | 4822 116 52207 | 1k2 5% 0,5W |
| 3069 | 4822 051 10752 | 7k5 2% 0,25W |
| 3072 | 4822 051 10479 | 47Ω 2% 0,25W |
| 3073 | 4822 116 52257 | 22k 5% 0,5W |
| 3074 | 4822 051 10103 | 10k 2% 0,25W |
| 3201 | 4822 053 21475 | 4M7 5% 0,5W |
| 3202 | 4822 053 21475 | 4M7 5% 0,5W |
| 3204 | 4822 116 40033 | NTC/PTC |
| 3204 | 4822 116 40215 | PTC |
| 3209 | 4822 113 80384 | 1Ω5 10% 7W |
| 3210 | 4822 116 52239 | 120k 5% 0,5W |
| 3211 | 4822 116 52239 | 120k 5% 0,5W |
| 3212 | 4822 116 52234 | 100k 5% 0,5W |
| 3213 | 4822 051 10823 | 82k 2% 0,25W |
| 3215 | 4822 051 10472 | 4k7 2% 0,25W |
| 3216 | 4822 115 90309 | 56Ω 10% 5W |
| 3239 | 4822 116 52297 | 68k 5% 0,5W |
| 3240 | 4822 116 52234 | 100k 5% 0,5W |
| 3240 | 4822 116 52297 | 68k 5% 0,5W |
| 3241 | 4822 113 80572 | 2Ω2 10% 5W |
| 3241 | 4822 113 80584 | 2Ω7 10% 5W |
| 3242 | 4822 051 10122 | 1k2 2% 0,25W |

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| | | |
|---|---|---|
| 3243 | 4822 116 52229 | 750Ω 5% 0,5W |
| 3244 | 4822 116 52211 | 150Ω 5% 0,5W |
| 3245 | 4822 116 52229 | 750Ω 5% 0,5W |
| 3247 | 4822 051 20222 | 2k2 5% 0,1W |
| 3248 | 4822 051 20222 | 2k2 5% 0,1W |
| 3249 | 4822 116 52258 | 220k 5% 0,5W |
| 3250 | 4822 116 52198 | 62Ω 5% 0,5W |
| 3251 | 4822 051 10102 | 1k 2% 0,25W |
| 3252 | 4822 116 52258 | 220k 5% 0,5W |
| 3253 | 4822 116 82738 | 10k 10% |
| 3255 | 4822 116 52243 | 1k5 5% 0,5W |
| 3266 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3267 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3268 | 4822 053 11689 | 68Ω 5% 2W |
| 3270 | 4822 051 10118 | 1Ω1 5% 0,25W |
| 3271 | 4822 053 10399 | 39Ω 5% 1W |
| 3272 | 4822 051 51201 | 120Ω 1% 0,125W |
| 3273 | 4822 051 10472 | 4k7 2% 0,25W |
| 3274 | 4822 051 10102 | 1k 2% 0,25W |
| 3275 | 4822 116 52206 | 120Ω 5% 0,5W |
| 3298 | 4822 051 10479 | 47Ω 2% 0,25W |
| 3298 | 4822 051 10569 | 56Ω 2% 0,25W |
| 3298 | 4822 051 10689 | 68Ω 2% 0,25W |
| 3298 | 4822 051 10821 | 820Ω 2% 0,25W |
| 3298 | 4822 051 10122 | 1k2 2% 0,25W |
| 3298 | 4822 051 10182 | 1k8 2% 0,25W |
| 3300 | 4822 053 10753 | 75k 5% 1W |
| 3304 | 4822 051 10473 | 47k 2% 0,25W |
| 3305 | 4822 051 10472 | 4k7 2% 0,25W |
| 3305 | 4822 051 10332 | 3k3 2% 0,25W |
| 3306 | 4822 051 10823 | 82k 2% 0,25W |
| 3308 | 4822 053 12151 | 150Ω 5% 3W |
| 3309 | 4822 051 10103 | 10k 2% 0,25W |
| 3310 | 4822 050 11109 | 11Ω 1% 0,4W |
| 3310 | 4822 116 52184 | 18Ω 5% 0,5W |
| 3311 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3312 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3313 | 4822 050 11109 | 11Ω 1% 0,4W |
| 3313 | 4822 116 52184 | 18Ω 5% 0,5W |
| 3314 | 4822 116 52223 | 430Ω 5% 0,5W |
| 3315 | 4822 116 52223 | 430Ω 5% 0,5W |
| 3317 | 4822 051 10682 | 6k8 2% 0,25W |
| 3320 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3321 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3322 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3331 | 4822 116 52267 | 30k 5% 0,5W |
| 3332 | 4822 116 52233 | 10k 5% 0,5W |
| 3351 | 4822 052 11279 | 27Ω 5% 0,5W |
| 3356 | 4822 051 10132 | 1k3 2% 0,25W |
| 3356 | 4822 051 10751 | 750Ω 2% 0,25W |
| 3357 | 4822 050 13302 | 3k3 1% 0,4W |
| 3357 | 4822 050 27871 | 787Ω 1% 0,6W |
| 3358 | 4822 116 52183 | 16Ω 5% 0,5W |
| 3360 | 4822 051 10122 | 1k2 2% 0,25W |
| 3362 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3364 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3365 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3366 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3368 | 4822 116 52226 | 560Ω 5% 0,5W |
| 3369 | 4822 116 52226 | 560Ω 5% 0,5W |
| 3370 | 4822 051 10332 | 3k3 2% 0,25W |
| 3371 | 4822 100 11348 | 1k 30% LIN |
| 3372 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3374 | 4822 116 52301 | 75k 5% 0,5W |
| 3375 | 5322 111 90282 | 2k4 2% 0,25W |
| 3376 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3378 | 4822 051 10101 | 100Ω 2% 0,25W |

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|---|---|---|
| 3380 | 4822 051 10152 | 1k5 2% 0,25W |
| 3381 | 4822 051 10152 | 1k5 2% 0,25W |
| 3382 | 4822 051 10103 | 10k 2% 0,25W |
| 3383 | 4822 051 10103 | 10k 2% 0,25W |
| 3387 | 4822 051 10223 | 22k 2% 0,25W |
| 3402 | 4822 051 10562 | 5k6 2% 0,25W |
| 3403 | 4822 051 10229 | 22Ω 2% 0,25W |
| 3404 | 4822 051 10182 | 1k8 2% 0,25W |
| 3405 | 4822 051 10333 | 33k 2% 0,25W |
| 3406 | 4822 100 11483 | 10k 30% LIN |
| 3407 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3408 | 4822 051 10563 | 56k 2% 0,25W |
| 3409 | 4822 116 52272 | 330k 5% 0,5W |
| 3410 | 5322 101 11013 | 330k 30% LIN |
| 3411 | 4822 051 10104 | 100k 2% 0,25W |
| 3411 | 4822 051 10913 | 91k 2% 0,25W |
| 3413 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3414 | 4822 051 10154 | 150k 2% 0,25W |
| 3415 | 4822 100 11392 | 47k 30% LIN |
| 3417 | 4822 116 52256 | 2k2 5% 0,5W |
| 3418 | 4822 051 10201 | 200Ω 2% 0,25W |
| 3419 | 4822 052 10279 | 27Ω 5% 0,33W |
| 3420 | 4822 050 23905 | 3M9 1% 0,6W |
| 3421 | 4822 116 52243 | 1k5 5% 0,5W |
| 3422 | 4822 116 81223 | 1M2 5% 0,5W |
| 3422 | 4822 116 81783 | 1M5 5% 0,5W |
| 3424 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3426 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3428 | 4822 116 52271 | 33k 5% 0,5W |
| 3429 | 4822 116 52269 | 3k3 5% 0,5W |
| 3430 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3437 | 4822 116 52224 | 470Ω 5% 0,5W |
| 3438 | 4822 116 52205 | 1k1 5% 0,5W |
| 3439 | 4822 116 52247 | 16k 5% 0,5W |
| 3441 | 4822 051 10622 | 6k2 2% 0,25W |
| 3442 | 4822 051 10332 | 3k3 2% 0,25W |
| 3444 | 4822 051 10103 | 10k 2% 0,25W |
| 3446 | 4822 116 52264 | 27k 5% 0,5W |
| 3450 | 4822 051 10432 | 4k3 2% 0,25W |
| 3451 | 4822 051 10432 | 4k3 2% 0,25W |
| 3455 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3456 | 4822 051 10124 | 120k 2% 0,25W |
| 3456 | 4822 051 10134 | 130k 2% 0,25W |
| 3457 | 4822 051 10822 | 8k2 2% 0,25W |
| 3457 | 4822 051 10912 | 9k1 2% 0,25W |
| 3458 | 4822 116 80676 | 1Ω5 5% 0,2W |
| 3459 | 4822 116 80676 | 1Ω5 5% 0,2W |
| 3460 | 4822 053 10271 | 270Ω 5% 1W |
| 3461 | 4822 116 80176 | 1Ω 5% 0,5W |
| 3462 | 4822 116 80176 | 1Ω 5% 0,5W |
| 3463 | 4822 116 80176 | 1Ω 5% 0,5W |
| 3465 | 4822 051 10681 | 680Ω 2% 0,25W |
| 3466 | 4822 116 52243 | 1k5 5% 0,5W |
| 3466 | 4822 116 52263 | 2k7 5% 0,5W |
| 3466 | 4822 116 52279 | 4k3 5% 0,5W |
| 3467 | 4822 100 20166 | 10k 30% LIN |
| 3468 | 4822 053 12221 | 220Ω 5% 3W |
| 3469 | 4822 050 11002 | 1k 1% 0,4W |
| 3469 | 4822 116 52263 | 2k7 5% 0,5W |
| 3469 | 4822 116 52279 | 4k3 5% 0,5W |
| 3473 | 4822 116 52253 | 2k 5% 0,5W |
| 3479 | 4822 051 10683 | 68k 2% 0,25W |
| 3480 | 4822 116 52234 | 100k 5% 0,5W |
| 3481 | 4822 051 10102 | 1k 2% 0,25W |
| 3482 | 4822 051 10229 | 22Ω 2% 0,25W |
| 3483 | 4822 051 10563 | 56k 2% 0,25W |
| 3484 | 4822 051 10223 | 22k 2% 0,25W |
| 3485 | 4822 051 10102 | 1k 2% 0,25W |

# Spare parts list / Stückliste / Liste

## Large signal panel A B G

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|---|---|---|
| 3500 | 4822 116 80176 | 1Ω 5% 0,5W |
| 3501 | 4822 116 52271 | 33k 5% 0,5W |
| 3502 | 4822 116 52299 | 7k5 5% 0,5W |
| 3503 | 4822 116 52299 | 7k5 5% 0,5W |
| 3504 | 4822 053 11108 | 1Ω 5% 2W |
| 3505 | 4822 116 52191 | 33Ω 5% 0,5W |
| 3506 | 4822 053 11108 | 1Ω 5% 2W |
| 3507 | 4822 116 52191 | 33Ω 5% 0,5W |
| 3508 | 4822 116 82773 | 1k8 10% 5W |
| 3509 | 4822 053 21154 | 150k 5% 0,5W |
| 3510 | 4822 053 12331 | 330Ω 5% 3W |
| 3511 | 4822 116 52176 | 10Ω 5% 0,5W |
| 3512 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3513 | 4822 100 20166 | 10k 30% LIN |
| 3514 | 4822 116 52186 | 22Ω 5% 0,5W |
| 3515 | 4822 116 81191 | 6Ω8 5% 0,3W |
| 3516 | 4822 116 81191 | 6Ω8 5% 0,3W |
| 3517 | 4822 052 11108 | 1Ω 5% 0,5W |
| 3518 | 4822 116 52267 | 30k 5% 0,5W |
| 3519 | 4822 116 52267 | 30k 5% 0,5W |
| 3520 | 4822 052 10338 | 3Ω3 5% 0,33W |
| 3521 | 4822 052 10338 | 3Ω3 5% 0,33W |
| 3524 | 4822 116 81753 | 4Ω7 5% 0,5W |
| 3527 | 4822 051 10102 | 1k 2% 0,25W |
| 3528 | 4822 116 52229 | 750Ω 5% 0,5W |
| 3529 | 4822 051 10104 | 100k 2% 0,25W |
| 3530 | 4822 051 10474 | 470k 2% 0,25W |
| 3531 | 4822 116 52274 | 36k 5% 0,5W |
| 3532 | 4822 116 52211 | 150Ω 5% 0,5W |
| 3533 | 4822 116 52211 | 150Ω 5% 0,5W |
| 3534 | 4822 052 11278 | 2Ω7 5% 0,5W |
| 3535 | 4822 052 11278 | 2Ω7 5% 0,5W |
| 3536 | 4822 116 52221 | 360Ω 5% 0,5W |
| 3537 | 4822 116 52186 | 22Ω 5% 0,5W |
| 3538 | 4822 116 52241 | 13k 5% 0,5W |
| 3538 | 4822 116 52238 | 12k 5% 0,5W |
| 3540 | 4822 116 52267 | 30k 5% 0,5W |
| 3541 | 4822 116 52285 | 470k 5% 0,5W |
| 3542 | 4822 051 10104 | 100k 2% 0,25W |
| 3543 | 4822 051 10152 | 1k5 2% 0,25W |
| 3544 | 4822 051 10393 | 39k 2% 0,25W |
| 3545 | 4822 116 52208 | 130Ω 5% 0,5W |
| 3547 | 4822 051 10518 | 5Ω1 5% 0,25W |
| 3548 | 4822 051 10392 | 3k9 2% 0,25W |
| 3549 | 4822 051 10124 | 120k 2% 0,25W |
| 3550 | 4822 116 52209 | 1k3 5% 0,5W |
| 3551 | 4822 051 10569 | 56Ω 2% 0,25W |
| 3601 | 4822 051 10104 | 100k 2% 0,25W |
| 3601 | 4822 051 10154 | 150k 2% 0,25W |
| 3602 | 4822 100 20166 | 10k 30% LIN |
| 3603 | 4822 051 10153 | 15k 2% 0,25W |
| 3603 | 4822 051 20183 | 18k 5% 0,1W |
| 3603 | 4822 051 10103 | 10k 2% 0,25W |
| 3603 | 4822 051 10912 | 9k1 2% 0,25W |
| 3604 | 4822 051 10124 | 120k 2% 0,25W |
| 3604 | 4822 051 10154 | 150k 2% 0,25W |
| 3604 | 4822 051 10134 | 130k 2% 0,25W |
| 3605 | 4822 051 10133 | 13k 2% 0,25W |
| 3605 | 4822 051 10243 | 24k 2% 0,25W |
| 3606 | 4822 051 10333 | 33k 2% 0,25W |
| 3607 | 4822 100 11213 | 22k 30% LIN |
| 3608 | 4822 051 10102 | 1k 2% 0,25W |
| 3609 | 4822 051 10473 | 47k 2% 0,25W |
| 3610 | 4822 051 10472 | 4k7 2% 0,25W |
| 3611 | 4822 051 20222 | 2k2 5% 0,1W |
| 3614 | 4822 051 10152 | 1k5 2% 0,25W |
| 3615 | 4822 116 52224 | 470Ω 5% 0,5W |
| 3616 | 4822 051 10332 | 3k3 2% 0,25W |
| 3617 | 4822 051 20222 | 2k2 5% 0,1W |
| 3618 | 4822 051 10104 | 100k 2% 0,25W |
| 3619 | 4822 051 20222 | 2k2 5% 0,1W |
| 3620 | 4822 051 10622 | 6k2 2% 0,25W |
| 3621 | 4822 051 10164 | 160k 2% 0,25W |
| 3622 | 4822 116 80176 | 1Ω 5% 0,5W |
| 3623 | 4822 116 80176 | 1Ω 5% 0,5W |
| 3623 | 4822 116 52242 | 130k 5% 0,5W |
| 3626 | 4822 116 52265 | 270k 5% 0,5W |
| 3626 | 4822 116 52242 | 130k 5% 0,5W |
| 3626 | 4822 116 52258 | 220k 5% 0,5W |
| 3627 | 4822 051 10103 | 10k 2% 0,25W |
| 3628 | 4822 116 52234 | 100k 5% 0,5W |
| 3629 | 4822 051 10224 | 220k 2% 0,25W |
| 3630 | 4822 051 10104 | 100k 2% 0,25W |
| 3631 | 4822 051 10182 | 1k8 2% 0,25W |
| 3632 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3632 | 4822 051 10153 | 15k 2% 0,25W |

**Jumpers**

| | | |
|---|---|---|
| 9039 | 4822 051 10333 | 33K 2% 0,25W |
| 4000 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4001 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4002 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4003 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4004 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4006 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4007 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4014 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4019 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4400 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4402 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4404 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4410 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4412 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4413 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4415 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4416 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4417 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4508 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4508 | 4822 051 10272 | 2k7 2% 0,25W |
| 4508 | 4822 051 10102 | 1k 2% 0,25W |
| 4530 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4531 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4533 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4534 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4541 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4552 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4610 | 4822 051 10008 | 0Ω 5% 0,25W |

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|---|---|---|
| 5202 | 4822 212 23611 | transf. assy CU20D3 |
| 5205 | 4822 212 23611 | transf. assy CU20D3 |
| 5230 | 4822 148 81167 | SOPS transf. |
| 5230 | 4822 148 81192 | SOPS transf. 33" |
| 5231 | 4822 526 10494 | ferrite bead |
| 5233 | 4822 526 10494 | ferrite bead |
| 5235 | 4822 526 10494 | ferrite bead |
| 5237 | 4822 526 10494 | ferrite bead |
| 5241 | 4822 157 63249 | 33μH 10% |
| 5255 | 4822 148 81225 | μSOPS transf. |
| 5260 | 4822 526 10494 | ferrite bead |
| 5262 | 4822 526 10494 | ferrite bead |
| 5308 | 4822 157 62826 | 270μH 10% |
| 5308 | 4822 157 63302 | 150μH 10% 33" |
| 5310 | 4822 157 63251 | 3,9μH 10% |
| 5310 | 4822 157 63301 | 1μH 15% 33" |
| 5381 | 4822 157 52265 | 100μH 10% |
| 5503 | 4822 157 63252 | line driver |
| 5511 | 4822 157 52407 | 39μH 7,5% |
| 5514 | 4822 157 63256 | DC-SHIFT |
| 5520 | 4822 157 63254 | LINEARITY |
| 5521 | 4822 157 63255 | COIL |
| 5524 | 4822 526 10494 | ferrite bead |
| 5526 | 4822 157 63253 | EAST-WEST |
| 5534 | 5322 157 52539 | 15μH 7,5% |
| 5543 | 4822 158 10549 | 12μH 7,5% |
| 5555 | 4822 140 10424 | L.O.T. |

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|---|---|---|
| 6000 | 4822 130 80446 | LL4148 |
| 6001 | 4822 130 80446 | BAS32L |
| 6008 | 4822 209 73095 | P4KE30C-7000 |
| 6010 | 4822 130 80446 | LL4148 |
| 6011 | 4822 130 80446 | LL4148 |
| 6012 | 4822 130 80446 | LL4148 |
| 6016 | 4822 130 80446 | LL4148 |
| 6021 | 4822 130 80446 | LL4148 |
| 6201 | 4822 130 80446 | LL4148 |
| 6210 | 4822 130 33887 | GP15J-16 |
| 6211 | 4822 130 33887 | GP15J-16 |
| 6212 | 4822 130 33887 | GP15J-16 |
| 6213 | 4822 130 33887 | GP15J-16 |
| 6216 | 4822 130 42606 | BYD33J |
| 6220 | 4822 130 33887 | GP15J |
| 6221 | 4822 130 33887 | GP15J |
| 6230 | 4822 130 33529 | BY229F-200 |
| 6232 | 4822 130 33529 | BY229F-200 |
| 6235 | 4822 130 81104 | MA689 |
| 6237 | 4822 130 80572 | RGP30J-L7004 |
| 6238 | 4822 130 80572 | RGP30J-L7004 |
| 6246 | 4822 130 82347 | LLZ-F6V8 |
| 6251 | 4822 130 80954 | LLZ-C5V6 |
| 6260 | 4822 130 80446 | LL4148 |
| 6262 | 4822 130 42488 | BYD33D |
| 6266 | 4822 130 34278 | BZX79-F6V8 |
| 6272 | 4822 130 34173 | BZX55-B5V6 |
| 6280 | 4822 130 30621 | 1N4148 |
| 6302 | 4822 130 80446 | LL4148 |
| 6303 | 4822 130 80446 | LL4148 |
| 6304 | 4822 130 80446 | LL4148 |
| 6306 | 5322 130 31504 | BZX79-C20 |
| 6308 | 4822 130 42488 | BYD33D |
| 6312 | 4822 130 42488 | BYD33D |
| 6315 | 4822 130 80446 | LL4148 |
| 6318 | 4822 130 80446 | LL4148 |
| 6319 | 4822 130 34173 | BZX79-C5V6 |
| 6321 | 4822 130 80954 | BZV55-C5V6 |
| 6331 | 4822 130 30621 | 1N4148 |
| 6349 | 4822 130 80446 | LL4148 |
| 6350 | 4822 130 80446 | LL4148 |
| 6351 | 4822 130 30621 | 1N4148 |
| 6352 | 4822 130 80446 | LL4148 |
| 6353 | 4822 130 80446 | LL4148 |
| 6355 | 4822 130 80446 | LL4148 |
| 6356 | 4822 130 80886 | LLZ-F22 |
| 6357 | 4822 130 80446 | LL4148 |
| 6370 | 4822 130 81512 | LLZ-C6V2 |
| 6371 | 4822 130 80446 | LL4148 |
| 6372 | 4822 130 80446 | LL4148 |

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## Large signal panel A B G

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|---|---|---|
| 6373 | 4822 130 82583 | LLZ-C9V1 |
| 6375 | 4822 130 80446 | LL4148 |
| 6376 | 4822 130 80922 | LLZ-C18 |
| 6376 | 4822 130 81143 | BZV55-C20 |
| 6403 | 4822 130 80446 | LL4148 |
| 6404 | 4822 130 80446 | LL4148 |
| 6417 | 4822 130 81223 | LLZ-C2V4 |
| 6440 | 4822 130 80446 | LL4148 |
| 6441 | 4822 130 80446 | LL4148 |
| 6451 | 5322 130 34834 | BZX79-C3V6 |
| 6452 | 4822 130 42488 | BYD33D |
| 6465 | 4822 130 80446 | LL4148 |
| 6466 | 4822 130 80446 | LL4148 |
| 6480 | 4822 130 31554 | BZX79-C4V3 |
| 6504 | 4822 130 42488 | BYD33D |
| 6506 | 4822 130 42488 | BYD33D |
| 6515 | 4822 130 80877 | BAV103 |
| 6516 | 4822 130 80877 | BAV103 |
| 6517 | 4822 130 42488 | BYD33D |
| 6519 | 4822 130 32896 | BYD33M |
| 6520 | 4822 130 32896 | BYD33M |
| 6526 | 4822 130 33531 | BY229F-600 |
| 6527 | 4822 130 82966 | MURF10150E |
| 6529 | 4822 130 34329 | BZX79-C43 |
| 6535 | 4822 130 82512 | BYV29F-400 |
| 6536 | 4822 130 82758 | BYV29F-300 |
| 6542 | 4822 130 30842 | BAV21 |
| 6546 | 4822 130 80446 | LL4148 |
| 6547 | 4822 130 80446 | LL4148 |
| 6551 | 4822 130 34278 | BZX79-B6V8 |
| 6553 | 4822 130 82334 | BAS85 |
| 6601 | 4822 130 42488 | BYD33D |
| 6629 | 4822 130 80446 | LL4148 |

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|---|---|---|
| 7000 | 4822 209 73311 | TDA1521Q/N4 |
| 7001 | 4822 209 73311 | TDA1521Q/N4 |
| 7002 | 4822 209 83163 | LM833N |
| 7003 | 4822 130 61207 | BC848 |
| 7005 | 5322 130 42136 | BC848C |
| 7006 | 5322 130 42136 | BC848C |
| 7007 | 4822 130 61207 | BC848 |
| 7008 | 4822 130 61207 | BC848 |
| 7009 | 4822 209 83163 | LM833N |
| 7010 | 5322 130 42012 | BC858 |
| 7011 | 4822 209 63913 | TDA1521AQ/N4 |
| 7012 | 4822 130 61207 | BC848 |
| 7013 | 4822 130 61207 | BC848 |
| 7201 | 5322 130 42756 | BC857C |
| 7216 | 4822 130 60851 | 2SC3973B |
| 7216 | 4822 130 62735 | BUT12AF |
| 7241 | 4822 130 61003 | BD944F |
| 7242 | 5322 130 41981 | BC848A |
| 7243 | 5322 130 41981 | BC848A |
| 7250 | 4822 130 62509 | BUX85F |
| 7251 | 4822 130 61207 | BC848 |
| 7268 | 4822 130 44121 | BC338 |
| 7270 | 4822 130 40823 | BD135 |
| 7272 | 4822 130 61207 | BC848 |
| 7273 | 4822 130 42513 | BC858C |
| 7305 | 5322 130 42136 | BC848C |
| 7311 | 4822 130 42513 | BC858C |
| 7312 | 5322 130 44647 | BC368 |
| 7312 | 4822 130 62955 | ON4703-BD437 |
| 7318 | 4822 130 42615 | BC817-40 |
| 7320 | 4822 130 82034 | CNX83A |
| 7321 | 4822 130 62742 | BD943F |
| 7360 | 5322 130 42756 | BC857C |
| 7369 | 5322 130 42755 | BC847C |
| 7370 | 5322 130 42755 | BC847C |
| 7371 | 4822 130 42513 | BC858C |
| 7380 | 4822 130 42513 | BC858C |
| 7381 | 5322 130 42136 | BC848C |
| 7384 | 5322 130 42755 | BC847C |
| 7385 | 5322 130 42136 | BC848C |
| 7400 | 4822 209 72363 | TDA2579A/N8 |
| 7402 | 5322 130 42136 | BC848C |
| 7403 | 4822 130 42513 | BC858C |
| 7407 | 4822 130 61207 | BC848 |
| 7417 | 4822 130 42513 | BC858C |
| 7444 | 5322 130 42136 | BC848C |
| 7445 | 5322 130 42136 | BC848C |
| 7450 | 4822 209 73308 | TDA3654Q/N3 |
| 7451 | 5322 130 42012 | BC858 |
| 7469 | 4822 130 44104 | BC328 |
| 7480 | 4822 130 42513 | BC858C |
| 7481 | 5322 130 42136 | BC848C |
| 7504 | 4822 130 62934 | 2 x ON4673 |
| 7506 | 4822 130 62934 | 2 x ON4673 |
| 7512 | 4822 130 44196 | BC548C |
| 7513 | 5322 130 60068 | BC558C |
| 7530 | 4822 130 61233 | BC857 |
| 7540 | 5322 130 42755 | BC847C |
| 7541 | 5322 130 42755 | BC847C |
| 7542 | 5322 130 42756 | BC857C |
| 7543 | 4822 130 60136 | BC856 |
| 7550 | 4822 130 80669 | BD643F |
| 7601 | 4822 130 61207 | BC848 |
| 7602 | 5322 130 42012 | BC858 |
| 7603 | 5322 130 42012 | BC858 |
| 7608 | 4822 130 44503 | BC547C |
| 7610 | 4822 130 60111 | 2SA1359 |
| 7616 | 4822 130 61207 | BC848 |
| 7618 | 4822 130 61207 | BC848 |

# Spare parts list / Stückliste / Liste

## Small signal panel C D F H

**Connectors**

| | | |
|---|---|---|
| | 4822 265 40252 | 7P male |
| | 4822 265 40253 | 8P |
| | 4822 265 41113 | 7P |
| | 4822 265 41114 | 9P |
| | 4822 265 41086 | 9P male |
| | 4822 265 41082 | 10P |
| | 4822 290 40295 | 7P male |
| | 4822 267 40648 | 5P male gold |
| | 4822 264 50149 | 10P male gold |
| | 4822 264 40207 | 3P male |
| | 4822 264 50149 | 10P male gold |
| | 4822 265 40442 | 10P male |
| | 4822 264 40207 | 3P male red |
| | 4822 265 20509 | 2P male |
| | 4822 265 30828 | 5P male brown |
| | 4822 265 30899 | 5P male black |
| | 4822 267 40648 | 5P male gold |
| | 4822 265 30437 | 3P male |

**Various parts**

| | | |
|---|---|---|
| | 4822 267 20427 | socket SCART+4xcinch |
| | 4822 267 51058 | socket SCART |
| | 4822 267 41005 | socket 2xcinch+2xSVHS |
| | 4822 267 41004 | socket HEADPH. +cinch+SVHS |
| | 4822 218 21075 | keyboard |
| | 4822 255 40901 | socket 40 POLE |
| 1100 | 4822 212 23281 | IR receiver |
| 1160 | 4822 210 10409 | FQ816ME/IF |
| 1160 | 4822 210 10416 | FQ816MF/IF |
| 1160 | 4822 210 10412 | FQ844 |
| 1248 | 4822 242 80364 | filter 4,43MHz |
| 1379 | 4822 242 70736 | crystal 7,159MHz |
| 1380 | 4822 242 70304 | crystal 8,867MHz |
| 1602 | 4822 242 80276 | crystal 10MHz |

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| | | |
|---|---|---|
| 2100 | 4822 124 40684 | 150μF 20% 6,3V |
| 2111 | 4822 122 32863 | 22nF 80% 50V |
| 2114 | 4822 124 22606 | 68μF 20% 16V |
| 2118 | 4822 122 31797 | 22nF 10% 63V |
| 2119 | 4822 122 31797 | 22nF 10% 63V |
| 2120 | 4822 122 32863 | 22nF 80% 50V |
| 2121 | 5322 122 31647 | 1nF 10% 63V |
| 2122 | 4822 122 32442 | 10nF 50V |
| 2123 | 4822 126 11804 | 330nF |
| 2130 | 4822 122 31797 | 22nF 10% 63V |
| 2131 | 4822 124 22606 | 68μF 20% 16V |
| 2132 | 4822 122 31797 | 22nF 10% 63V |
| 2137 | 4822 122 32442 | 10nF 50V |
| 2138 | 4822 124 40193 | 68μF 20% 16V |
| 2160 | 4822 124 40849 | 330μF 20% 16V |
| 2161 | 4822 122 33496 | 100nF 10% 63V |
| 2163 | 4822 122 33496 | 100nF 10% 63V |
| 2164 | 4822 122 33496 | 100nF 10% 63V |
| 2166 | 4822 124 40684 | 150μF 20% 6,3V |
| 2168 | 4822 122 32927 | 220nF |
| 2169 | 4822 122 32442 | 10nF 50V |
| 2170 | 4822 124 40195 | 150μF 20% 16V |
| 2171 | 4822 122 32862 | 10nF 80% 50V |
| 2172 | 4822 124 41506 | 47μF 20% 16V |
| 2188 | 4822 122 32863 | 22nF 80% 50V |
| 2189 | 4822 122 32863 | 22nF 80% 50V |
| 2190 | 4822 122 32863 | 22nF 80% 50V |

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| | | |
|---|---|---|
| 2193 | 4822 122 32153 | 1,8nF 10% 63V |
| 2194 | 4822 122 32153 | 1,8nF 10% 63V |
| 2196 | 4822 124 22606 | 68μF 20% 16V |
| 2197 | 4822 124 22606 | 68μF 20% 16V |
| 2216 | 4822 122 32927 | 220nF |
| 2219 | 4822 122 32927 | 220nF |
| 2234 | 4822 122 32927 | 220nF |
| 2240 | 4822 122 32927 | 220nF |
| 2241 | 4822 121 42408 | 220nF 5% 63V |
| 2242 | 4822 124 40196 | 220μF 20% 16V |
| 2243 | 4822 121 42408 | 220nF 5% 63V |
| 2245 | 4822 122 32927 | 220nF |
| 2249 | 4822 122 32862 | 10nF 80% 50V |
| 2250 | 4822 051 10102 | 1K 2% 0,25W |
| 2252 | 4822 121 42408 | 220nF 5% 63V |
| 2253 | 4822 126 11492 | 220nF 10% 50V |
| 2254 | 4822 122 32927 | 220nF |
| 2255 | 4822 124 41643 | 100μF 20% 16V |
| 2257 | 4822 122 31947 | 100nF 20% 63V |
| 2258 | 4822 122 31765 | 100pF 5% 50V |
| 2260 | 4822 122 31947 | 100nF 20% 63V |
| 2261 | 4822 122 31947 | 100nF 20% 63V |
| 2268 | 4822 122 31947 | 100nF 20% 63V |
| 2269 | 4822 122 32482 | 22pF 5% 63V |
| 2270 | 4822 122 32863 | 22nF 80% 50V |
| 2274 | 4822 122 32862 | 10nF 80% 50V |
| 2301 | 5322 122 31647 | 1nF 10% 63V |
| 2305 | 4822 126 10324 | 33pF 63V |
| 2306 | 4822 122 31772 | 47pF 5% 50V |
| 2307 | 4822 122 31971 | 10pF 10% 50V |
| 2310 | 4822 122 31774 | 56pF 5% 50V |
| 2311 | 4822 122 31765 | 100pF 5% 50V |
| 2311 | 4822 122 31808 | 150pF 10% 50V |
| 2312 | 4822 122 32863 | 22nF 80% 50V |
| 2318 | 4822 121 42408 | 220nF 5% 63V |
| 2324 | 4822 122 32863 | 22nF 80% 50V |
| 2338 | 4822 122 31972 | 39pF 5% 50V |
| 2338 | 4822 122 31772 | 47pF 5% 50V |
| 2339 | 4822 122 31772 | 47pF 5% 50V |
| 2342 | 4822 122 31972 | 39pF 5% 50V |
| 2343 | 4822 122 31727 | 470pF 5% 63V |
| 2344 | 4822 122 31775 | 680pF 5% 50V |
| 2345 | 4822 122 31807 | 1200pF 5% 50V |
| 2347 | 5322 122 31647 | 1nF 10% 63V |
| 2353 | 4822 122 32862 | 10nF 80% 50V |
| 2360 | 4822 124 40272 | 33μF 20% 16V |
| 2361 | 4822 124 40849 | 330μF 20% 16V |
| 2365 | 4822 122 31352 | 180pF 2% 100V |
| 2366 | 4822 122 32863 | 22nF 80% 50V |
| 2367 | 4822 122 32862 | 10nF 80% 50V |
| 2368 | 4822 122 32862 | 10nF 80% 50V |
| 2369 | 4822 122 31825 | 27pF 10% 50V |
| 2371 | 4822 122 31825 | 27pF 10% 50V |
| 2372 | 4822 122 31965 | 220pF 5% 63V |
| 2373 | 4822 122 31965 | 220pF 5% 63V |
| 2374 | 4822 122 32863 | 22nF 80% 50V |
| 2375 | 4822 122 32863 | 22nF 80% 50V |
| 2376 | 5322 122 31641 | 47nF 50V |
| 2377 | 5322 121 42661 | 330nF 5% 63V |
| 2378 | 4822 122 31947 | 100nF 20% 63V |
| 2379 | 4822 125 50207 | 33pF trimmer |
| 2380 | 4822 125 50207 | 33pF trimmer |
| 2381 | 5322 121 42661 | 330nF 5% 63V |
| 2382 | 5322 122 31647 | 1nF 10% 63V |
| 2383 | 4822 122 32442 | 10nF 50V |
| 2384 | 5322 122 31647 | 1nF 10% 63V |
| 2385 | 4822 122 32442 | 10nF 50V |
| 2386 | 4822 122 32862 | 10nF 80% 50V |

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| | | |
|---|---|---|
| 2387 | 4822 124 40435 | 10μF 20% 50V |
| 2388 | 5322 122 33446 | 3,3nF 10% 63V |
| 2390 | 4822 122 32863 | 22nF 80% 50V |
| 2391 | 4822 122 32863 | 22nF 80% 50V |
| 2392 | 4822 122 32863 | 22nF 80% 50V |
| 2395 | 4822 122 32863 | 22nF 80% 50V |
| 2396 | 4822 122 32863 | 22nF 80% 50V |
| 2397 | 4822 122 32863 | 22nF 80% 50V |
| 2398 | 4822 124 40435 | 10μF 20% 50V |
| 2399 | 4822 124 41506 | 47μF 20% 16V |
| 2400 | 4822 122 32863 | 22nF 80% 50V |
| 2433 | 4822 122 32863 | 22nF 80% 50V |
| 2434 | 5322 122 33446 | 3,3nF 10% 63V |
| 2435 | 5322 122 33446 | 3,3nF 10% 63V |
| 2436 | 4822 122 31961 | 68pF 5% 63V |
| 2438 | 4822 122 32863 | 22nF 80% 50V |
| 2440 | 4822 122 32863 | 22nF 80% 50V |
| 2442 | 4822 122 32863 | 22nF 80% 50V |
| 2445 | 4822 126 11804 | 330nF |
| 2446 | 4822 126 11804 | 330nF |
| 2447 | 4822 126 11804 | 330nF |
| 2451 | 5322 121 42661 | 330nF 5% 63V |
| 2452 | 4822 124 40242 | 1μF 20% 63V |
| 2453 | 4822 122 31774 | 56pF 5% 50V |
| 2454 | 4822 126 10324 | 33pF 63V |
| 2455 | 4822 126 10324 | 33pF 63V |
| 2456 | 4822 126 10324 | 33pF 63V |
| 2476 | 4822 124 41577 | 4,7μF 20% 50V |
| 2478 | 4822 122 31784 | 4,7nF 10% 50V |
| 2479 | 4822 122 33105 | 56nF 10% 63V |
| 2480 | 4822 124 40272 | 33μF 20% 16V |
| 2600 | 4822 122 31947 | 100nF 20% 63V |
| 2602 | 4822 122 31947 | 100nF 20% 63V |
| 2604 | 4822 122 31947 | 100nF 20% 63V |
| 2606 | 4822 122 31947 | 100nF 20% 63V |
| 2608 | 4822 122 32927 | 220nF |
| 2620 | 4822 122 33496 | 100nF 10% 63V |
| 2620 | 4822 122 32927 | 220nF |
| 2621 | 4822 122 33496 | 100nF 10% 63V |
| 2622 | 4822 122 33496 | 100nF 10% 63V |
| 2622 | 4822 122 32927 | 220nF |
| 2623 | 4822 122 33496 | 100nF 10% 63V |
| 2624 | 5322 122 31842 | 330pF 5% 63V |
| 2626 | 4822 121 42408 | 220nF 5% 63V |
| 2627 | 5322 124 41431 | 22μF 20% 35V |
| 2628 | 5322 122 31842 | 330pF 5% 63V |
| 2630 | 4822 122 32927 | 220nF |
| 2632 | 5322 122 31842 | 330pF 5% 63V |
| 2634 | 4822 121 42408 | 220nF 5% 63V |
| 2636 | 5322 122 31842 | 330pF 5% 63V |
| 2638 | 4822 121 42408 | 220nF 5% 63V |
| 2640 | 5322 122 31842 | 330pF 5% 63V |
| 2642 | 4822 122 32927 | 220nF |
| 2644 | 5322 122 31842 | 330pF 5% 63V |
| 2646 | 4822 122 32927 | 220nF |
| 2658 | 4822 122 31961 | 68pF 5% 63V |
| 2659 | 4822 122 31961 | 68pF 5% 63V |
| 2660 | 5322 122 31647 | 1nF 10% 63V |
| 2662 | 5322 122 31647 | 1nF 10% 63V |
| 2664 | 4822 122 32153 | 1,8nF 10% 63V |
| 2666 | 4822 122 32153 | 1,8nF 10% 63V |
| 2680 | 4822 122 31947 | 100nF 20% 63V |
| 2681 | 4822 122 32542 | 47nF 10% 63V |
| 2682 | 4822 124 40195 | 150μF 20% 16V |
| 2684 | 4822 121 51252 | 470nF 5% 63V |
| 2686 | 4822 121 51252 | 470nF 5% 63V |
| 2688 | 4822 122 31782 | 15nF 10% 50V |
| 2690 | 4822 122 31782 | 15nF 10% 50V |

# Spare parts list / Stückliste / Liste

## Small signal panel C D F H

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| | | |
|---|---|---|
| 2692 | 4822 122 31981 | 33nF ±0,5pF 50V |
| 2694 | 4822 122 31916 | 5,6nF 10% 63V |
| 2696 | 4822 122 31981 | 33nF ±0,5pF 50V |
| 2697 | 4822 122 31965 | 220pF 5% 63V |
| 2698 | 4822 122 31916 | 5,6nF 10% 63V |
| 2699 | 4822 122 31965 | 220pF 5% 63V |
| 2700 | 4822 124 40242 | 1µF 20% 63V |
| 2702 | 4822 124 40242 | 1µF 20% 63V |
| 2704 | 4822 122 31644 | 2,2nF 10% 63V |
| 2706 | 5322 124 41431 | 22µF 20% 35V |
| 2707 | 4822 122 31784 | 4,7nF 10% 50V |
| 2714 | 4822 122 32863 | 22nF 80% 50V |
| 2716 | 4822 122 32597 | 6,8nF 10% 63V |
| 2720 | 5322 124 41431 | 22µF 20% 35V |
| 2721 | 4822 122 31784 | 4,7nF 10% 50V |
| 2726 | 4822 122 31644 | 2,2nF 10% 63V |
| 2727 | 4822 124 42362 | 33µF 20% 16V |
| 2734 | 4822 122 32863 | 22nF 80% 50V |
| 2736 | 4822 122 32597 | 6,8nF 10% 63V |

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| | | |
|---|---|---|
| 3100 | 4822 051 10102 | 1k 2% 0,25W |
| 3101 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3103 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3104 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3105 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3113 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3114 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3115 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3116 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3117 | 4822 051 20222 | 2k2 5% 0,1W |
| 3119 | 4822 051 20222 | 2k2 5% 0,1W |
| 3120 | 4822 051 20222 | 2k2 5% 0,1W |
| 3121 | 4822 051 10123 | 12k 2% 0,25W |
| 3122 | 4822 051 10822 | 8k2 2% 0,25W |
| 3123 | 4822 051 10822 | 8k2 2% 0,25W |
| 3124 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3125 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3126 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3127 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3128 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3129 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3131 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3132 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3133 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3134 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3135 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3136 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3137 | 4822 116 52183 | 16Ω 5% 0,5W |
| 3138 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3139 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3140 | 4822 050 11002 | 1k 1% 0,4W |
| 3141 | 4822 050 11002 | 1k 1% 0,4W |
| 3142 | 4822 050 11002 | 1k 1% 0,4W |
| 3143 | 4822 050 11002 | 1k 1% 0,4W |
| 3144 | 4822 050 11002 | 1k 1% 0,4W |
| 3145 | 4822 050 11002 | 1k 1% 0,4W |
| 3146 | 4822 050 11002 | 1k 1% 0,4W |
| 3148 | 4822 051 10473 | 47k 2% 0,25W |
| 3149 | 4822 051 10473 | 47k 2% 0,25W |
| 3150 | 4822 051 10473 | 47k 2% 0,25W |
| 3151 | 4822 051 10562 | 5k6 2% 0,25W |
| 3152 | 4822 051 10103 | 10k 2% 0,25W |
| 3153 | 4822 051 10103 | 10k 2% 0,25W |
| 3154 | 4822 051 10152 | 1k5 2% 0,25W |
| 3155 | 4822 051 10104 | 100k 2% 0,25W |
| 3156 | 4822 051 10562 | 5k6 2% 0,25W |
| 3157 | 4822 050 11002 | 1k 1% 0,4W |
| 3158 | 4822 050 11002 | 1k 1% 0,4W |
| 3159 | 4822 051 10103 | 10k 2% 0,25W |
| 3160 | 4822 052 10758 | 7Ω5 5% 0,33W |
| 3160 | 4822 052 10109 | 10Ω 5% 0,33W |
| 3160 | 4822 116 81203 | 10Ω 5% 0,3W |
| 3161 | 4822 051 10103 | 10k 2% 0,25W |
| 3162 | 4822 052 10758 | 7Ω5 5% 0,33W |
| 3163 | 4822 051 10223 | 22k 2% 0,25W |
| 3164 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3165 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3166 | 4822 052 10228 | 2Ω2 5% 0,33W |
| 3167 | 4822 051 10122 | 1k2 2% 0,25W |
| 3168 | 5322 111 90282 | 2k4 2% 0,25W |
| 3169 | 4822 050 11002 | 1k 1% 0,4W |
| 3170 | 4822 116 82772 | 3Ω9 5% 0.3W |
| 3171 | 4822 052 11511 | 510Ω 5% 0,5W |
| 3172 | 4822 052 10229 | 22Ω 5% 0,33W |
| 3175 | 4822 051 10153 | 15k 2% 0,25W |
| 3176 | 4822 051 10103 | 10k 2% 0,25W |
| 3177 | 4822 051 10103 | 10k 2% 0,25W |
| 3178 | 4822 051 10223 | 22k 2% 0,25W |
| 3180 | 4822 116 52224 | 470Ω 5% 0,5W |
| 3181 | 4822 051 10822 | 8k2 2% 0,25W |
| 3182 | 4822 116 52214 | 200Ω 5% 0,5W |
| 3183 | 4822 116 52233 | 10k 5% 0,5W |
| 3184 | 4822 051 51201 | 120Ω 1% 0,125W |
| 3185 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3186 | 4822 116 52256 | 2k2 5% 0,5W |
| 3187 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3188 | 4822 051 20222 | 2k2 5% 0,1W |
| 3189 | 4822 051 10223 | 22k 2% 0,25W |
| 3190 | 4822 051 10823 | 82k 2% 0,25W |
| 3191 | 4822 051 56203 | 62k 1% 0,125W |
| 3192 | 4822 051 10153 | 15k 2% 0,25W |
| 3193 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3194 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3196 | 4822 051 10473 | 47k 2% 0,25W |
| 3197 | 4822 051 10473 | 47k 2% 0,25W |
| 3200 | 4822 051 10472 | 4k7 2% 0,25W |
| 3201 | 4822 051 10472 | 4k7 2% 0,25W |
| 3205 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3206 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3207 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3208 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3209 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3210 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3211 | 4822 116 52217 | 270Ω 5% 0,5W |
| 3215 | 4822 051 10689 | 68Ω 2% 0,25W |
| 3216 | 4822 052 10159 | 15Ω 5% 0,33W |
| 3217 | 4822 116 52224 | 470Ω 5% 0,5W |
| 3218 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3219 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3220 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3222 | 4822 116 52217 | 270Ω 5% 0,5W |
| 3224 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3225 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3232 | 4822 051 10102 | 1k 2% 0,25W |
| 3233 | 4822 051 10102 | 1k 2% 0,25W |
| 3234 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3235 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3237 | 4822 116 52217 | 270Ω 5% 0,5W |
| 3238 | 4822 116 52222 | 390Ω 5% 0,5W |
| 3239 | 4822 051 10271 | 270Ω 2% 0,25W |
| 3240 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3241 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3242 | 4822 116 52219 | 330Ω 5% 0,5W |
| 3243 | 4822 051 10152 | 1k5 2% 0,25W |
| 3244 | 4822 051 10102 | 1k 2% 0,25W |
| 3245 | 4822 051 10474 | 470k 2% 0,25W |
| 3246 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3247 | 4822 051 10102 | 1k 2% 0,25W |
| 3248 | 4822 051 10681 | 680Ω 2% 0,25W |
| 3249 | 4822 051 10102 | 1k 2% 0,25W |
| 3251 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3252 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3253 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3253 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3254 | 4822 052 10159 | 15Ω 5% 0,33W |
| 3255 | 4822 051 10821 | 820Ω 2% 0,25W |
| 3259 | 4822 051 10103 | 10k 2% 0,25W |
| 3260 | 4822 052 10159 | 15Ω 5% 0,33W |
| 3261 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3262 | 4822 051 10103 | 10k 2% 0,25W |
| 3263 | 4822 051 10689 | 68Ω 2% 0,25W |
| 3264 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3265 | 4822 051 10103 | 10k 2% 0,25W |
| 3266 | 4822 051 10103 | 10k 2% 0,25W |
| 3267 | 4822 051 10103 | 10k 2% 0,25W |
| 3268 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3269 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3270 | 4822 051 10472 | 4k7 2% 0,25W |
| 3271 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3272 | 4822 116 52228 | 680Ω 5% 0,5W |
| 3273 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3274 | 4822 051 10103 | 10k 2% 0,25W |
| 3275 | 4822 051 10689 | 68Ω 2% 0,25W |
| 3276 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3277 | 4822 051 10271 | 270Ω 2% 0,25W |
| 3279 | 4822 051 10689 | 68Ω 2% 0,25W |
| 3285 | 4822 051 10103 | 10k 2% 0,25W |
| 3286 | 4822 051 10103 | 10k 2% 0,25W |
| 3287 | 4822 051 10103 | 10k 2% 0,25W |
| 3288 | 4822 051 10103 | 10k 2% 0,25W |
| 3300 | 4822 051 10103 | 10k 2% 0,25W |
| 3301 | 4822 051 10332 | 3k3 2% 0,25W |
| 3303 | 4822 051 10361 | 360Ω 2% 0,25W |
| 3304 | 4822 051 51201 | 120Ω 1% 0,125W |
| 3304 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3305 | 4822 051 10104 | 100k 2% 0,25W |
| 3306 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3306 | 4822 051 10241 | 240Ω 2% 0,25W |
| 3310 | 4822 116 52207 | 1k2 5% 0,5W |
| 3311 | 4822 051 10182 | 1k8 2% 0,25W |
| 3312 | 4822 051 10511 | 510Ω 2% 0,25W |
| 3313 | 4822 051 10362 | 3k6 2% 0,25W |
| 3314 | 4822 051 10102 | 1k 2% 0,25W |
| 3315 | 4822 051 10103 | 10k 2% 0,25W |
| 3316 | 4822 051 10112 | 1k1 2% 0,25W |
| 3317 | 4822 116 52233 | 10k 5% 0,5W |
| 3324 | 4822 051 10223 | 22k 2% 0,25W |
| 3325 | 4822 051 10682 | 6k8 2% 0,25W |
| 3326 | 4822 051 10103 | 10k 2% 0,25W |
| 3327 | 4822 051 10122 | 1k2 2% 0,25W |
| 3329 | 4822 051 10392 | 3k9 2% 0,25W |
| 3329 | 4822 051 10108 | 1Ω 5% 0,25W |
| 3336 | 4822 051 10472 | 4k7 2% 0,25W |
| 3338 | 4822 051 10391 | 390Ω 2% 0,25W |
| 3339 | 4822 051 10153 | 15k 2% 0,25W |
| 3339 | 4822 051 10391 | 390Ω 2% 0,25W |
| 3342 | 4822 051 20222 | 2k2 5% 0,1W |
| 3344 | 4822 051 10273 | 27k 2% 0,25W |

# Spare parts list / Stückliste / Liste

## Small signal panel C D F H

| | | |
|---|---|---|
| 3345 | 4822 051 10102 | 1k 2% 0,25W |
| 3350 | 4822 051 51201 | 120Ω 1% 0,125W |
| 3351 | 4822 051 10472 | 4k7 2% 0,25W |
| 3353 | 4822 051 10332 | 3k3 2% 0,25W |
| 3360 | 4822 052 10278 | 2Ω7 5% 0,33W |
| 3361 | 4822 051 10102 | 1k 2% 0,25W |
| 3369 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3370 | 4822 100 11391 | 330Ω 30% LIN |
| 3371 | 4822 051 10431 | 430Ω 2% 0,25W |
| 3372 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3375 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3376 | 4822 116 52286 | 5k1 5% 0,5W |
| 3377 | 4822 051 10103 | 10k 2% 0,25W |
| 3377 | 4822 051 10682 | 6k8 2% 0,25W |
| 3380 | 4822 050 11002 | 1k 1% 0,4W |
| 3382 | 4822 051 20222 | 2k2 5% 0,1W |
| 3383 | 4822 051 10333 | 33k 2% 0,25W |
| 3385 | 4822 051 10105 | 1M 5% 0,25W |
| 3387 | 4822 050 11002 | 1k 1% 0,4W |
| 3389 | 4822 051 10182 | 1k8 2% 0,25W |
| 3390 | 4822 051 10821 | 820Ω 2% 0,25W |
| 3391 | 4822 051 20222 | 2k2 5% 0,1W |
| 3392 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3393 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3394 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3395 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3396 | 4822 051 20222 | 2k2 5% 0,1W |
| 3397 | 4822 052 10249 | 24Ω 5% 0,33W |
| 3398 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3399 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3410 | 4822 116 52224 | 470Ω 5% 0,5W |
| 3425 | 4822 116 52224 | 470Ω 5% 0,5W |
| 3426 | 4822 116 52224 | 470Ω 5% 0,5W |
| 3450 | 4822 051 20222 | 2k2 5% 0,1W |
| 3451 | 4822 051 10432 | 4k3 2% 0,25W |
| 3453 | 4822 051 10511 | 510Ω 2% 0,25W |
| 3454 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3455 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3456 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3465 | 4822 050 11002 | 1k 1% 0,4W |
| 3471 | 4822 116 52233 | 10k 5% 0,5W |
| 3472 | 4822 051 10682 | 6k8 2% 0,25W |
| 3473 | 4822 051 10362 | 3k6 2% 0,25W |
| 3474 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3475 | 4822 051 10124 | 120k 2% 0,25W |
| 3476 | 4822 051 10154 | 150k 2% 0,25W |
| 3477 | 4822 116 52286 | 5k1 5% 0,5W |
| 3478 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3478 | 4822 116 52224 | 470Ω 5% 0,5W |
| 3479 | 4822 051 10223 | 22k 2% 0,25W |
| 3480 | 4822 052 10278 | 2Ω7 5% 0,33W |
| 3481 | 4822 052 10278 | 2Ω7 5% 0,33W |
| 3482 | 4822 116 52223 | 430Ω 5% 0,5W |
| 3483 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3488 | 4822 051 20222 | 2k2 5% 0,1W |
| 3492 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3590 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3600 | 4822 051 10362 | 3k6 2% 0,25W |
| 3600 | 4822 051 10472 | 4k7 2% 0,25W |
| 3602 | 4822 100 11212 | 2k2 30% LIN |
| 3603 | 4822 051 10332 | 3k3 2% 0,25W |
| 3604 | 4822 051 10182 | 1k8 2% 0,25W |
| 3605 | 4822 051 10472 | 4k7 2% 0,25W |
| 3606 | 4822 052 10279 | 27Ω 5% 0,33W |
| 3607 | 4822 051 10302 | 3k 2% 0,25W |
| 3608 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3610 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3612 | 4822 051 10102 | 1k 2% 0,25W |
| 3620 | 4822 051 10183 | 18k 2% 0,25W |
| 3622 | 4822 051 10183 | 18k 2% 0,25W |
| 3624 | 4822 051 10102 | 1k 2% 0,25W |
| 3626 | 4822 051 10183 | 18k 2% 0,25W |
| 3628 | 4822 051 10102 | 1k 2% 0,25W |
| 3630 | 4822 051 10183 | 18k 2% 0,25W |
| 3632 | 4822 051 10102 | 1k 2% 0,25W |
| 3634 | 4822 051 10183 | 18k 2% 0,25W |
| 3636 | 4822 051 10102 | 1k 2% 0,25W |
| 3638 | 4822 051 10183 | 18k 2% 0,25W |
| 3640 | 4822 051 10102 | 1k 2% 0,25W |
| 3642 | 4822 051 10183 | 18k 2% 0,25W |
| 3644 | 4822 051 10102 | 1k 2% 0,25W |
| 3646 | 4822 051 10183 | 18k 2% 0,25W |
| 3650 | 4822 051 10392 | 3k9 2% 0,25W |
| 3651 | 4822 051 10123 | 12k 2% 0,25W |
| 3652 | 4822 051 10392 | 3k9 2% 0,25W |
| 3653 | 4822 051 10123 | 12k 2% 0,25W |
| 3654 | 4822 116 52244 | 15k 5% 0,5W |
| 3660 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3662 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3664 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3665 | 4822 052 10159 | 15Ω 5% 0,33W |
| 3666 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3668 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3672 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3680 | 4822 052 10279 | 27Ω 5% 0,33W |
| 3682 | 4822 051 10568 | 5Ω6 5% 0,25W |
| 3684 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3686 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3700 | 4822 116 52263 | 2k7 5% 0,5W |
| 3702 | 4822 051 10223 | 22k 2% 0,25W |
| 3704 | 4822 051 10102 | 1k 2% 0,25W |
| 3706 | 4822 052 10109 | 10Ω 5% 0,33W |
| 3708 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3710 | 4822 051 20183 | 18k 5% 0,1W |
| 3712 | 4822 116 52203 | 91Ω 5% 0,5W |
| 3713 | 4822 116 52203 | 91Ω 5% 0,5W |
| 3714 | 4822 051 10828 | 8Ω2 5% 0,25W |
| 3720 | 4822 052 10109 | 10Ω 5% 0,33W |
| 3722 | 4822 116 52263 | 2k7 5% 0,5W |
| 3724 | 4822 051 10223 | 22k 2% 0,25W |
| 3726 | 4822 051 10102 | 1k 2% 0,25W |
| 3728 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3730 | 4822 051 20183 | 18k 5% 0,1W |
| 3732 | 4822 116 52203 | 91Ω 5% 0,5W |
| 3733 | 4822 116 52203 | 91Ω 5% 0,5W |
| 3734 | 4822 051 10828 | 8Ω2 5% 0,25W |
| 3998 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3998 | 4822 051 10181 | 180Ω 2% 0,25W |
| 3998 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3998 | 4822 051 10332 | 3k3 2% 0,25W |
| 3998 | 4822 051 10393 | 39k 2% 0,25W |
| 3998 | 4822 051 10473 | 47k 2% 0,25W |
| 3998 | 4822 051 10563 | 56k 2% 0,25W |
| 3998 | 4822 051 10333 | 33k 2% 0,25W |

### Jumpers

| | | |
|---|---|---|
| 4066 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4105 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4106 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4107 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4108 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4109 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4110 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4111 | 4822 051 10008 | 0Ω 5% 0,25W |

### Jumpers

| | | |
|---|---|---|
| 4112 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4114 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4115 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4120 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4127 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4130 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4148 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4161 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4164 | 4822 051 20008 | 0Ω 5% 0,1W |
| 4164 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4166 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4170 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4171 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4184 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4200 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4201 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4203 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4205 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4210 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4220 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4234 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4237 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4241 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4246 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4255 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4280 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4300 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4302 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4319 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4320 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4321 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4330 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4331 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4346 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4360 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4361 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4376 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4377 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4386 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4420 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4440 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4452 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4453 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4454 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4460 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4498 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4600 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4610 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4672 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4673 | 4822 051 10008 | 0Ω 5% 0,25W |

| | | |
|---|---|---|
| 5100 | 4822 157 53906 | 47μH 10% |
| 5115 | 4822 152 20677 | 10μH 10% |
| 5270 | 4822 157 52983 | 22μH 10% |
| 5303 | 4822 157 63065 | 0,68μH 20% |
| 5304 | 4822 157 63065 | 0,68μH 20% |
| 5305 | 4822 157 62823 | 26μH 6% |
| 5310 | 4822 157 63245 | 82μH 10% |
| 5345 | 4822 157 62822 | 4,5μH 6% |
| 5346 | 4822 157 62823 | 26μH 6% |
| 5370 | 4822 157 62824 | 7,5μH 6% |
| 5403 | 4822 157 63065 | 0,68μH 20% |
| 5403 | 4822 157 53302 | 1μH 20% |
| 5404 | 4822 157 63065 | 0,68μH 20% |
| 5404 | 4822 157 53302 | 1μH 20% |
| 5454 | 4822 157 63065 | 0,68μH 20% |

Small

5455
5456

6117
6120
6121
6163
6165
6166
6168
6172
6173
6178
6205
6206
6207
6256
6257
6280
6281
6342
6343
6386
6387
6450
6465
6478
6479
6480
6610
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6661
6662
6663
6664
6665

7119
7120
7121
7365
7130
7137
7175
7176
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7183
7186
7188
7193
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7216
7219
7243
7244
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7260
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7268
7270

## Small signal panel C D F H

| | | |
|---|---|---|
| 5455 | 4822 157 63065 | 0,68μH 20% |
| 5456 | 4822 157 63065 | 0,68μH 20% |

| | | |
|---|---|---|
| 6117 | 4822 130 80906 | LLZ-F7V5 |
| 6120 | 4822 130 80446 | LL4148 |
| 6121 | 4822 130 80446 | LL4148 |
| 6163 | 4822 130 81226 | LLZ-F33 |
| 6165 | 4822 130 80446 | BAS32L |
| 6166 | 4822 130 80446 | BAS32L |
| 6168 | 4822 130 80446 | LL4148 |
| 6172 | 4822 130 80906 | LLZ-C7V5 |
| 6173 | 4822 130 80446 | LL4148 |
| 6178 | 4822 130 81222 | LLZ-C15 |
| 6205 | 4822 130 80446 | BAS32L |
| 6206 | 4822 130 80446 | BAS32L |
| 6207 | 4822 130 80446 | BAS32L |
| 6256 | 4822 130 80446 | BAS32L |
| 6257 | 4822 130 80446 | BAS32L |
| 6280 | 4822 130 80446 | LL4148 |
| 6281 | 4822 130 80446 | LL4148 |
| 6342 | 4822 130 80888 | BA682 |
| 6343 | 4822 130 80888 | BA682 |
| 6386 | 4822 130 80446 | LL4148 |
| 6387 | 4822 130 80954 | LLZ-C5V6 |
| 6450 | 4822 130 81512 | LLZ-C6V2 |
| 6465 | 4822 130 80446 | LL4148 |
| 6478 | 4822 130 82345 | LLZ-C22 |
| 6479 | 4822 130 80877 | BAV103 |
| 6480 | 4822 130 82348 | LLZ-F9V1 |
| 6610 | 4822 130 30621 | 1N4148 |
| 6660 | 4822 130 80446 | LL4148 |
| 6661 | 4822 130 81223 | LLZ-C2V4 |
| 6662 | 4822 130 80446 | LL4148 |
| 6663 | 4822 130 81223 | LLZ-C2V4 |
| 6664 | 4822 130 80446 | LL4148 |
| 6665 | 4822 130 80446 | LL4148 |

| | | |
|---|---|---|
| 7119 | 5322 130 41982 | BC848B |
| 7120 | 5322 130 41982 | BC848B |
| 7121 | 4822 130 42513 | BC858C |
| 7365 | 4822 209 30837 | TDA4650/V4/S1 |
| 7130 | 5322 130 42136 | BC848C |
| 7137 | 4822 209 71521 | X2404 |
| 7175 | 5322 209 10883 | PCF8574P |
| 7176 | 4822 130 42513 | BC858C |
| 7177 | 4822 130 42513 | BC858C |
| 7178 | 5322 130 41982 | BC848B |
| 7182 | 5322 130 44743 | BSR12 |
| 7183 | 5322 130 41982 | BC848B |
| 7186 | 4822 209 73852 | PMBT2369 |
| 7188 | 4822 130 60511 | BC847B |
| 7193 | 4822 209 83163 | LM833N |
| 7193 | 4822 209 61115 | LF353N |
| 7216 | 4822 130 42615 | BC817-40 |
| 7219 | 4822 209 63292 | TEA6414 |
| 7243 | 5322 130 41983 | BC858B |
| 7244 | 5322 130 41982 | BC848B |
| 7258 | 5322 209 10421 | HEF4094BP |
| 7260 | 4822 130 42615 | BC817-40 |
| 7261 | 5322 130 42136 | BC848C |
| 7265 | 5322 130 41982 | BC848B |
| 7268 | 4822 130 42615 | BC817-40 |
| 7270 | 5322 130 41982 | BC848B |

| | | |
|---|---|---|
| 7273 | 4822 130 42615 | BC817-40 |
| 7305 | 5322 130 41983 | BC858B |
| 7311 | 5322 130 41982 | BC848B |
| 7312 | 5322 130 42136 | BC848C |
| 7313 | 4822 130 42513 | BC858C |
| 7314 | 5322 130 42136 | BC848C |
| 7315 | 5322 130 42136 | BC848C |
| 7324 | 4822 209 63901 | TDA4568/V2 |
| 7326 | 5322 130 42136 | BC848C |
| 7338 | 5322 130 41982 | BC848B |
| 7350 | 5322 130 41982 | BC848B |
| 7360 | 4822 130 42615 | BC817-40 |
| 7364 | 4822 209 30389 | TDA4510/V8 |
| 7365 | 4822 209 30837 | TDA4650/V4/S1 |
| 7366 | 4822 209 63108 | TDA4660/V2 |
| 7390 | 4822 130 42513 | BC858C |
| 7395 | 4822 209 30394 | TDA8443B/C1 |
| 7410 | 4822 209 73852 | PMBT2369 |
| 7430 | 4822 209 63733 | TDA4680/V5 |
| 7450 | 5322 130 42136 | BC848C |
| 7450 | 5322 130 42755 | BC847C |
| 7451 | 5322 130 42136 | BC848C |
| 7451 | 5322 130 42755 | BC847C |
| 7471 | 5322 130 42136 | BC848C |
| 7480 | 5322 130 44921 | BD943 |
| 7492 | 5322 130 42136 | BC848C |
| 7600 | 4822 209 63967 | TDA8417/V2 |
| 7620 | 4822 209 10263 | 4052B |
| 7622 | 4822 209 10263 | 4052B |
| 7630 | 4822 209 83163 | LM833N |
| 7635 | 4822 209 83163 | LM833N |
| 7660 | 5322 130 41982 | BC848B |
| 7661 | 5322 130 41982 | BC848B |
| 7662 | 5322 130 41982 | BC848B |
| 7680 | 4822 209 63734 | TDA8425/V7 |
| 7704 | 4822 209 83163 | LM833N |
| 7706 | 5322 130 41982 | BC848B |
| 7708 | 5322 130 41983 | BC858B |
| 7730 | 5322 130 41982 | BC848B |
| 7732 | 5322 130 41983 | BC858B |

# Spare parts list / Stückliste / Liste

## High end-box L M

**Connectors**

| | | |
|---|---|---|
| | 4822 267 70257 | IC socket 48P |
| | 4822 255 40901 | IC socket 40P |
| | 4822 267 60252 | IC socket 24P |
| | 4822 267 50885 | IC socket 16P |
| | 4822 265 40472 | 10p gold plated |

**Various**

| | | |
|---|---|---|
| 1100 | 4822 242 72572 | crystal 12MHz |
| 1200 | 4822 242 71417 | cryst. 13,875MHz |

-||-

| | | |
|---|---|---|
| 2100 | 4822 122 32999 | 2,2nF 5% 63V |
| 2101 | 4822 122 32999 | 2,2nF 5% 63V |
| 2102 | 4822 122 31825 | 27pF 10% 50V |
| 2103 | 4822 122 31825 | 27pF 10% 50V |
| 2104 | 4822 124 40435 | 10µF 20% 50V |
| 2105 | 4822 122 33496 | 100nF 10% 63V |
| 2106 | 4822 122 33498 | 2,7nF 10% 63V |
| 2107 | 4822 124 41715 | 220µF 20% 6,3V |
| 2108 | 4822 124 41506 | 47µF 20% 16V |
| 2109 | 4822 122 31965 | 220pF 5% 63V |
| 2110 | 4822 122 31965 | 220pF 5% 63V |
| 2111 | 5322 122 31842 | 330pF 5% 63V |
| 2112 | 4822 122 33496 | 100nF 10% 63V |
| 2113 | 5322 122 32163 | 5,6pF 5% 100V |
| 2114 | 4822 122 33496 | 100nF 10% 63V |
| 2115 | 4822 122 31965 | 220pF 5% 63V |
| 2116 | 4822 122 31965 | 220pF 5% 63V |
| 2117 | 5322 122 31842 | 330pF 5% 63V |
| 2118 | 4822 122 31981 | 33nF ±0,5pF 50V |
| 2119 | 4822 126 11492 | 220nF 10% 50V |
| 2120 | 4822 122 31797 | 22nF 10% 63V |
| 2121 | 4822 122 31797 | 22nF 10% 63V |
| 2123 | 4822 122 33496 | 100nF 10% 63V |
| 2124 | 4822 122 33496 | 100nF 10% 63V |
| 2125 | 4822 122 31971 | 10pF 10% 50V |
| 2126 | 4822 122 33496 | 100nF 10% 63V |
| 2127 | 4822 122 33496 | 100nF 10% 63V |
| 2128 | 4822 122 33496 | 100nF 10% 63V |
| 2130 | 4822 122 31765 | 100pF 5% 50V |
| 2131 | 4822 122 31765 | 100pF 5% 50V |
| 2133 | 4822 122 31765 | 100pF 5% 50V |
| 2134 | 4822 122 31746 | 1000pF 5% 50V |
| 2135 | 4822 122 31772 | 47pF 5% 50V |
| 2136 | 4822 122 31746 | 1000pF 5% 50V |
| 2137 | 4822 122 32504 | 15pF 5% 50V |
| 2138 | 4822 122 31971 | 10pF 10% 50V |
| 2139 | 4822 122 31772 | 47pF 5% 50V |
| 2140 | 4822 122 31772 | 47pF 5% 50V |
| 2141 | 4822 122 31772 | 47pF 5% 50V |
| 2142 | 4822 122 31772 | 47pF 5% 50V |
| 2143 | 4822 122 31772 | 47pF 5% 50V |
| 2144 | 4822 122 31772 | 47pF 5% 50V |
| 2146 | 4822 122 31746 | 1000pF 5% 50V |
| 2147 | 4822 122 32507 | 6,8pF 5% 50V |
| 2148 | 4822 122 31965 | 220pF 5% 63V |
| 2149 | 4822 122 31965 | 220pF 5% 63V |
| 2150 | 5322 121 42661 | 330nF 5% 63V |
| 2151 | 4822 122 31971 | 10pF 10% 50V |
| 2152 | 4822 122 31774 | 56pF 5% 50V |
| 2153 | 4822 126 11492 | 220nF 10% 50V |
| 2154 | 4822 122 33496 | 100nF 10% 63V |
| 2155 | 4822 122 31972 | 39pF 5% 50V |
| 2156 | 4822 122 31808 | 150pF 10% 50V |
| 2157 | 4822 122 31808 | 150pF 10% 50V |

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| | | |
|---|---|---|
| 2158 | 4822 122 33496 | 100nF 10% 63V |
| 2159 | 4822 122 32444 | 33pF 5% 50V |
| 2160 | 4822 122 31808 | 150pF 10% 50V |
| 2161 | 4822 122 31808 | 150pF 10% 50V |
| 2162 | 4822 122 33496 | 100nF 10% 63V |
| 2163 | 4822 122 33496 | 100nF 10% 63V |
| 2164 | 4822 122 33496 | 100nF 10% 63V |
| 2165 | 4822 122 31981 | 33nF +-0,5pF 50V |
| 2166 | 4822 122 31772 | 47pF 5% 50V |
| 2167 | 4822 122 31772 | 47pF 5% 50V |
| 2168 | 4822 122 31772 | 47pF 5% 50V |
| 2169 | 4822 124 41643 | 100µF 20% 16V |
| 2170 | 4822 122 33496 | 100nF 10% 63V |
| 2172 | 4822 122 33496 | 100nF 10% 63V |
| 2173 | 4822 122 33496 | 100nF 10% 63V |
| 2174 | 4822 122 33496 | 100nF 10% 63V |
| 2175 | 4822 122 33496 | 100nF 10% 63V |
| 2176 | 4822 122 33496 | 100nF 10% 63V |
| 2177 | 4822 122 33496 | 100nF 10% 63V |
| 2178 | 4822 122 33496 | 100nF 10% 63V |
| 2179 | 4822 122 31768 | 180pF 5% 50V |
| 2180 | 4822 122 31768 | 180pF 5% 50V |
| 2181 | 4822 122 33496 | 100nF 10% 63V |
| 2182 | 4822 122 33496 | 100nF 10% 63V |
| 2183 | 4822 122 33496 | 100nF 10% 63V |
| 2184 | 4822 122 31772 | 47pF 5% 50V |
| 2185 | 4822 122 31772 | 47pF 5% 50V |
| 2186 | 4822 122 32082 | 4,7pF 5% 50V |
| 2187 | 4822 124 41715 | 220µF 20% 6,3V |
| 2188 | 4822 122 32999 | 2,2nF 5% 63V |
| 2198 | 4822 122 31971 | 10pF 10% 50V |
| 2199 | 4822 122 31772 | 47pF 5% 50V |
| 2200 | 4822 124 41643 | 100µF 20% 16V |
| 2201 | 5322 122 31842 | 330pF 5% 63V |
| 2202 | 4822 124 41576 | 2,2µF 20% 50V |
| 2203 | 4822 122 31825 | 27pF 10% 50V |
| 2204 | 4822 122 32442 | 10nF 50V |
| 2205 | 4822 122 32442 | 10nF 50V |
| 2206 | 4822 122 32504 | 15pF 5% 50V |
| 2207 | 4822 122 31765 | 100pF 5% 50V |
| 2208 | 4822 122 32142 | 270pF 5% 63V |
| 2209 | 4822 122 31797 | 22nF 10% 63V |
| 2210 | 4822 122 31727 | 470pF 5% 63V |
| 2211 | 5322 122 31647 | 1nF 10% 63V |
| 2212 | 4822 122 32504 | 15pF 5% 50V |
| 2215 | 4822 124 41576 | 2,2µF 20% 50V |
| 2216 | 4822 122 33496 | 100nF 10% 63V |
| 2217 | 4822 124 41576 | 2,2µF 20% 50V |
| 2218 | 4822 124 41596 | 22µF 20% 50V |
| 2219 | 4822 122 33496 | 100nF 10% 63V |
| 2220 | 4822 124 41577 | 4,7µF 20% 50V |
| 2221 | 4822 122 33496 | 100nF 10% 63V |
| 2222 | 4822 122 33496 | 100nF 10% 63V |
| 2223 | 4822 124 41643 | 100µF 20% 16V |
| 2224 | 4822 121 42937 | 2,7nF 1% 250V |
| 2225 | 4822 122 31765 | 100pF 5% 50V |
| 2227 | 4822 124 40435 | 10µF 20% 50V |
| 2228 | 4822 122 32142 | 270pF 5% 63V |
| 2229 | 4822 122 33496 | 100nF 10% 63V |
| 2230 | 4822 122 32142 | 270pF 5% 63V |
| 2233 | 4822 122 31765 | 100pF 5% 50V |
| 2235 | 4822 122 33498 | 2,7nF 10% 63V |
| 2236 | 4822 122 32891 | 68nF 10% 63V |
| 2237 | 4822 122 33496 | 100nF 10% 63V |
| 2250 | 4822 122 33496 | 100nF 10% 63V |
| 2251 | 4822 124 41554 | 220µF 20% 10V |
| 2252 | 4822 122 33496 | 100nF 10% 63V |

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| | | |
|---|---|---|
| 2253 | 4822 121 51252 | 470nF 5% 63V |
| 2254 | 4822 121 51252 | 470nF 5% 63V |
| 2255 | 4822 122 33496 | 100nF 10% 63V |
| 2256 | 4822 122 31965 | 220pF 5% 63V |
| 2257 | 4822 122 31965 | 220pF 5% 63V |
| 2258 | 4822 122 31769 | 18pF 5% 50V |
| 2259 | 4822 122 31774 | 56pF 5% 50V |
| 2260 | 4822 122 31774 | 56pF 5% 50V |
| 2261 | 4822 122 33496 | 100nF 10% 63V |
| 2262 | 4822 124 41643 | 100µF 20% 16V |
| 2265 | 4822 124 41643 | 100µF 20% 16V |
| 2266 | 4822 126 11725 | 1µF 20% 50V |
| 2268 | 4822 124 41997 | 470µF 10V |
| 2269 | 4822 122 33496 | 100nF 10% 63V |
| 2270 | 4822 122 33496 | 100nF 10% 63V |
| 2271 | 4822 122 33496 | 100nF 10% 63V |
| 2272 | 4822 122 33496 | 100nF 10% 63V |
| 2273 | 4822 124 40731 | 330µF 20% 6,3V |
| 2274 | 4822 124 41506 | 47µF 20% 16V |
| 2275 | 4822 122 33496 | 100nF 10% 63V |
| 2276 | 4822 122 33496 | 100nF 10% 63V |
| 2277 | 4822 124 41506 | 47µF 20% 16V |
| 2286 | 4822 122 31765 | 100pF 5% 50V |
| 2287 | 4822 122 31765 | 100pF 5% 50V |
| 2289 | 5322 122 32269 | 6,8pF 5% 50V |
| 2291 | 5322 122 32269 | 6,8pF 5% 50V |
| 2292 | 4822 124 41643 | 100µF 20% 16V |
| 2293 | 5322 122 32269 | 6,8pF 5% 50V |
| 2294 | 4822 122 31769 | 18pF 5% 50V |
| 2295 | 5322 122 32269 | 6,8pF 5% 50V |
| 2296 | 4822 122 31769 | 18pF 5% 50V |
| 2297 | 5322 122 32269 | 6,8pF 5% 50V |
| 2298 | 4822 122 31769 | 18pF 5% 50V |
| 2299 | 5322 122 32269 | 6,8pF 5% 50V |
| 2301 | 4822 122 33496 | 100nF 10% 63V |
| 2302 | 4822 122 33496 | 100nF 10% 63V |
| 2303 | 4822 122 33496 | 100nF 10% 63V |
| 2304 | 4822 122 32442 | 10nF 50V |
| 2305 | 4822 122 32442 | 10nF 50V |
| 2306 | 4822 122 32442 | 10nF 50V |
| 2307 | 4822 122 33496 | 100nF 10% 63V |
| 2308 | 4822 122 33496 | 100nF 10% 63V |
| 2309 | 4822 122 33496 | 100nF 10% 63V |
| 2310 | 4822 124 41997 | 470µF 20% 10V |
| 2311 | 4822 124 41506 | 47µF 20% 16V |
| 2312 | 4822 122 31769 | 18pF 5% 50V |

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| | | |
|---|---|---|
| 3000 | 4822 116 52186 | 22Ω 5% 0,5W |
| 3000 | 4822 116 52188 | 27Ω 5% 0,5W |
| 3001 | 4822 051 10102 | 1k 2% 0,25W |
| 3001 | 4822 051 10122 | 1k2 2% 0,25W |
| 3100 | 4822 051 20222 | 2k2 5% 0,1W |
| 3101 | 4822 051 20222 | 2k2 5% 0,1W |
| 3102 | 4822 051 10473 | 47k 2% 0,25W |
| 3103 | 4822 051 10473 | 47k 2% 0,25W |
| 3104 | 4822 051 10181 | 180Ω 2% 0,25W |
| 3106 | 4822 051 10752 | 7k5 2% 0,25W |
| 3107 | 4822 051 10562 | 5k6 2% 0,25W |
| 3108 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3109 | 4822 051 10152 | 1k5 2% 0,25W |
| 3110 | 4822 051 10102 | 1k 2% 0,25W |
| 3111 | 4822 051 10473 | 47k 2% 0,25W |
| 3112 | 4822 051 10103 | 10k 2% 0,25W |
| 3113 | 4822 051 10109 | 10Ω 2% 0,25W |
| 3114 | 4822 051 10104 | 100k 2% 0,25W |
| 3119 | 4822 051 10152 | 1k5 2% 0,25W |

5% 63V
5% 63V
10% 63V
5% 63V
5% 63V
% 50V
% 50V
% 50V
10% 63V
20% 16V
20% 16V
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10% 63V
10% 63V
10% 63V
10% 63V
20% 6,3V
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0% 63V
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0,5W
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6 0,25W
0,25W

## High end-box L M

| | | |
|---|---|---|
| 3120 | 4822 051 10332 | 3k3 2% 0,25W |
| 3121 | 4822 051 10472 | 4k7 2% 0,25W |
| 3122 | 4822 051 10473 | 47k 2% 0,25W |
| 3123 | 4822 051 10122 | 1k2 2% 0,25W |
| 3124 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3126 | 4822 051 10272 | 2k7 2% 0,25W |
| 3127 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3131 | 4822 051 10109 | 10Ω 2% 0,25W |
| 3132 | 4822 051 10152 | 1k5 2% 0,25W |
| 3133 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3134 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3135 | 4822 051 10272 | 2k7 2% 0,25W |
| 3136 | 4822 116 81193 | 15Ω 5% 0,3W |
| 3137 | 4822 051 10223 | 22k 2% 0,25W |
| 3138 | 4822 051 10124 | 120k 2% 0,25W |
| 3139 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3140 | 4822 051 10224 | 220k 2% 0,25W |
| 3141 | 4822 051 10223 | 22k 2% 0,25W |
| 3142 | 4822 051 10104 | 100k 2% 0,25W |
| 3143 | 4822 051 10104 | 100k 2% 0,25W |
| 3144 | 4822 051 10272 | 2k7 2% 0,25W |
| 3145 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3146 | 4822 051 20222 | 2k2 5% 0,1W |
| 3147 | 4822 051 10279 | 27Ω 2% 0,25W |
| 3148 | 4822 051 10479 | 47Ω 2% 0,25W |
| 3151 | 4822 051 10102 | 1k 2% 0,25W |
| 3152 | 4822 051 10621 | 620Ω 2% 0,25W |
| 3153 | 4822 051 10122 | 1k2 2% 0,25W |
| 3155 | 4822 051 10271 | 270Ω 2% 0,25W |
| 3156 | 4822 051 10102 | 1k 2% 0,25W |
| 3157 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3158 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3159 | 4822 051 20222 | 2k2 5% 0,1W |
| 3160 | 4822 051 10241 | 240Ω 2% 0,25W |
| 3161 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3162 | 4822 051 10102 | 1k 2% 0,25W |
| 3163 | 4822 051 10332 | 3k3 2% 0,25W |
| 3164 | 4822 051 20222 | 2k2 5% 0,1W |
| 3165 | 4822 051 10332 | 3k3 2% 0,25W |
| 3166 | 4822 051 20222 | 2k2 5% 0,1W |
| 3168 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3169 | 4822 051 10105 | 1M 5% 0,25W |
| 3170 | 4822 051 10102 | 1k 2% 0,25W |
| 3171 | 4822 051 10102 | 1k 2% 0,25W |
| 3172 | 4822 051 51102 | 1k1 1% 0,125W |
| 3173 | 4822 051 10102 | 1k 2% 0,25W |
| 3174 | 4822 051 10102 | 1k 2% 0,25W |
| 3175 | 4822 051 10683 | 68k 2% 0,25W |
| 3176 | 4822 051 10103 | 10k 2% 0,25W |
| 3198 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3200 | 4822 111 41423 | 18Ω 5% 0,3W |
| 3202 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3203 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3204 | 4822 051 10103 | 10k 2% 0,25W |
| 3205 | 4822 051 10102 | 1k 2% 0,25W |
| 3206 | 4822 051 10332 | 3k3 2% 0,25W |
| 3207 | 4822 051 10104 | 100k 2% 0,25W |
| 3208 | 4822 051 10102 | 1k 2% 0,25W |
| 3209 | 4822 051 10562 | 5k6 2% 0,25W |
| 3210 | 4822 111 41424 | 22Ω 5% 0,3W |
| 3211 | 4822 051 10229 | 22Ω 2% 0,25W |
| 3212 | 4822 051 10122 | 1k2 2% 0,25W |
| 3213 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3214 | 4822 051 10303 | 30k 2% 0,25W |
| 3215 | 4822 051 10102 | 1k 2% 0,25W |
| 3216 | 4822 051 10562 | 5k6 2% 0,25W |
| 3217 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3218 | 4822 051 10155 | 1M5 5% 0,25W |

| | | |
|---|---|---|
| 3220 | 4822 051 10473 | 47k 2% 0,25W |
| 3221 | 4822 051 10181 | 180Ω 2% 0,25W |
| 3222 | 4822 051 10683 | 68k 2% 0,25W |
| 3223 | 4822 051 10102 | 1k 2% 0,25W |
| 3224 | 4822 051 20222 | 2k2 5% 0,1W |
| 3225 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3226 | 4822 051 10681 | 680Ω 2% 0,25W |
| 3227 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3228 | 4822 100 11483 | 10k 30% LIN |
| 3230 | 4822 051 10562 | 5k6 2% 0,25W |
| 3231 | 4822 051 20222 | 2k2 5% 0,1W |
| 3232 | 4822 051 10102 | 1k 2% 0,25W |
| 3251 | 4822 051 10393 | 39k 2% 0,25W |
| 3252 | 4822 051 10751 | 750Ω 2% 0,25W |
| 3253 | 4822 051 10751 | 750Ω 2% 0,25W |
| 3254 | 4822 051 10221 | 220Ω 2% 0,25W |
| 3255 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3256 | 4822 051 10681 | 680Ω 2% 0,25W |
| 3260 | 4822 051 10822 | 8k2 2% 0,25W |
| 3261 | 4822 051 10472 | 4k7 2% 0,25W |
| 3262 | 4822 111 41424 | 22Ω 5% 0,3W |
| 3274 | 4822 051 10223 | 22k 2% 0,25W |
| 3275 | 4822 051 10102 | 1k 2% 0,25W |
| 3276 | 4822 051 10392 | 3k9 2% 0,25W |
| 3279 | 4822 051 10122 | 1k2 2% 0,25W |
| 3280 | 4822 051 10102 | 1k 2% 0,25W |
| 3281 | 4822 051 20222 | 2k2 5% 0,1W |
| 3290 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3291 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3292 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3293 | 4822 051 10561 | 560Ω 2% 0,25W |
| 3296 | 4822 051 55601 | 560Ω 1% 0,25W |
| 3297 | 4822 051 52611 | 261Ω 1% 0,25W |
| 3298 | 4822 051 10102 | 1k 2% 0,25W |
| 3299 | 4822 051 10102 | 1k 2% 0,25W |
| 3301 | 4822 051 10339 | 33Ω 2% 0,25W |
| 3302 | 4822 051 10339 | 33Ω 2% 0,25W |
| 3303 | 4822 051 10339 | 33Ω 2% 0,25W |
| 3304 | 4822 051 10109 | 10Ω 2% 0,25W |
| 3310 | 4822 051 10912 | 9k1 2% 0,25W |
| 3320 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3321 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3322 | 4822 051 10008 | 0Ω 5% 0,25W |

Jumpers

| | | |
|---|---|---|
| 4001 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4007 | 4822 051 10008 | 0Ω 5% 0,25W |

| | | |
|---|---|---|
| 5040 | 4822 157 52983 | 22μH 10% |
| 5041 | 4822 157 52983 | 22μH 10% |
| 5100 | 4822 157 63246 | 6μH |
| 5101 | 4822 157 63247 | 1,4μH |
| 5102 | 4822 157 52403 | 3,3μH 10% |
| 5103 | 4822 157 60147 | 2,2μH |
| 5104 | 4822 157 60147 | 2,2μH |
| 5105 | 4822 157 60147 | 2,2μH |
| 5106 | 4822 157 60147 | 2,2μH |
| 5107 | 4822 157 60147 | 2,2μH |
| 5108 | 4822 157 60147 | 2,2μH |
| 5109 | 4822 157 60147 | 2,2μH |
| 5150 | 4822 157 52224 | 15μH 10% |
| 5151 | 4822 157 60498 | 56μH 10% |
| 5152 | 4822 157 60498 | 56μH 10% |
| 5201 | 4822 157 52224 | 15μH 10% |
| 5202 | 4822 157 52138 | 27μH 10% |
| 5251 | 4822 157 60147 | 2,2μH |
| 5252 | 4822 157 60147 | 2,2μH |

| | | |
|---|---|---|
| 6102 | 5322 130 80119 | BBY40 |
| 6103 | 5322 130 80119 | BBY40 |
| 6150 | 4822 130 82914 | DIODE |
| 6160 | 4822 130 80446 | LL4148 |
| 6200 | 4822 130 80884 | LLZ-C5V1 |
| 6201 | 4822 130 31253 | BZX55-C2V4 |
| 6202 | 4822 130 80446 | LL4148 |
| 6250 | 4822 130 33706 | BZX84-B5V1 |
| 6251 | 4822 130 80446 | LL4148 |

| | | |
|---|---|---|
| 7100 | 4822 130 61207 | BC848 |
| 7101 | 5322 130 42136 | BC848C |
| 7103 | 5322 130 42012 | BC858 |
| 7104 | 4822 130 61207 | BC848 |
| 7105 | 5322 130 42012 | BC858 |
| 7106 | 4822 130 61207 | BC848 |
| 7107 | 4822 130 61207 | BC848 |
| 7108 | 4822 130 40938 | BC548 |
| 7109 | 5322 130 42012 | BC858 |
| 7110 | 5322 130 42012 | BC858 |
| 7111 | 4822 130 61207 | BC848 |
| 7112 | 5322 130 42012 | BC858 |
| 7113 | 5322 130 42012 | BC858 |
| 7116 | 4822 130 42131 | BF550 |
| 7117 | 4822 130 42131 | BF550 |
| 7119 | 5322 130 42136 | BC848C |
| 7120 | 5322 130 42136 | BC848C |
| 7121 | 5322 130 42136 | BC848C |
| 7122 | 5322 130 42136 | BC848C |
| 7123 | 4822 130 42513 | BC858C |
| 7124 | 5322 130 42136 | BC848C |
| 7125 | 5322 130 42136 | BC848C |
| 7156 | 4822 130 61207 | BC848 |
| 7157 | 4822 130 61207 | BC848 |
| 7159 | 4822 130 61207 | BC848 |
| 7160 | 5322 130 42012 | BC858 |
| 7170 | 4822 130 42513 | BC858C |
| 7200 | 4822 209 63645 | SAA5231/V7 |
| 7201 | 4822 209 63902 | SAA9042P/A |
| 7202 | 4822 209 63893 | LH2464-10 |
| 7203 | 4822 209 63423 | TDA2579B/N2 |
| 7204 | 4822 209 30868 | PCF80C51BH-3P |
| 7205 | 4822 209 63892 | UPD91237C |
| 7206 | 4822 209 82341 | PC74HCT04P |
| 7207 | 4822 209 82341 | PC74HCT04P |
| 7209 | 4822 209 83163 | LM833N |
| 7210 | 4822 209 63894 | PC74HCT4066P |
| 7211 | 4822 209 30913 | TDA8703/C4 |
| 7212 | 4822 209 30913 | TDA8703/C4 |
| 7213 | 4822 209 30913 | TDA8703/C4 |
| 7214 | 5322 209 11588 | PC74HCT195P |
| 7215 | 5322 209 11588 | PC74HCT195P |
| 7216 | 5322 209 11588 | PC74HCT195P |
| 7217 | 5322 209 11588 | PC74HCT195P |
| 7218 | 4822 209 72042 | MC78L05ACP |
| 7250 | 4822 209 60525 | TMS4C1050-3N |
| 7251 | 4822 209 60525 | TMS4C1050-3N |
| 7252 | 4822 209 60525 | TMS4C1050-3N |
| 7253 | 4822 209 63891 | SDA9060 |
| 7254 | 4822 209 63897 | TDA4563/V5 |

# Spare parts list / Stückliste / Liste

## PIP panel J

**Connectors**

| | |
|---|---|
| 4822 265 40503 | 5P female gold |
| 4822 265 40472 | 10P female gold |
| 4822 265 30828 | 5P male |
| 4822 265 30899 | 5P |
| 4822 265 20509 | 2P grey |
| 4822 265 20511 | 2P blue |

**Various parts**

| | | |
|---|---|---|
| 1155 | 4822 320 40051 | delay line DL711 |
| 1201 | 4822 242 70304 | crystal 8,867MHz |
| 1212 | 4822 242 70736 | crystal 7,159MHz |
| 1600 | 4822 210 50124 | UV916E/IEC |
| 1610 | 4822 242 80275 | OFWG3962 |

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|---|---|---|
| 2103 | 4822 122 32444 | 33pF 5% 50V |
| 2105 | 4822 122 31766 | 120pF 5% 50V |
| 2118 | 4822 122 31775 | 680pF 5% 50V |
| 2119 | 4822 122 31808 | 150pF 10% 50V |
| 2120 | 4822 122 31807 | 1200pF 5% 50V |
| 2125 | 4822 122 32863 | 22nF 80% 50V |
| 2155 | 4822 122 32862 | 10nF 80% 50V |
| 2158 | 4822 122 32862 | 10nF 80% 50V |
| 2160 | 4822 121 42408 | 220nF 5% 63V |
| 2161 | 4822 121 41854 | 150nF 5% 63V |
| 2162 | 4822 122 31947 | 100nF 20% 63V |
| 2171 | 4822 122 31961 | 68pF 5% 63V |
| 2172 | 4822 126 11175 | 22pF 5% 50V |
| 2176 | 4822 126 11175 | 22pF 5% 50V |
| 2177 | 4822 122 31961 | 68pF 5% 63V |
| 2180 | 4822 122 31768 | 180pF 5% 50V |
| 2181 | 4822 122 31768 | 180pF 5% 50V |
| 2185 | 4822 122 32863 | 22nF 80% 50V |
| 2187 | 4822 122 32863 | 22nF 80% 50V |
| 2189 | 4822 122 31746 | 1000pF 5% 50V |
| 2196 | 4822 122 33105 | 56nF 10% 63V |
| 2197 | 4822 122 31385 | 22pF 50V |
| 2201 | 4822 122 31746 | 1000pF 5% 50V |
| 2202 | 4822 125 50045 | 20pF trim. |
| 2211 | 4822 122 31746 | 1000pF 5% 50V |
| 2212 | 4822 125 50045 | 20pF trim. |
| 2220 | 5322 121 42661 | 330nF 5% 63V |
| 2222 | 4822 122 32542 | 47nF 10% 63V |
| 2227 | 4822 122 31842 | 330pF 5% 63V |
| 2230 | 4822 124 41578 | 6,8µF 20% 50V |
| 2232 | 4822 124 41678 | 22µF 20% 25V |
| 2234 | 4822 122 33496 | 100nF 10% 63V |
| 2235 | 4822 124 41578 | 6,8µF 20% 50V |
| 2238 | 4822 121 42937 | 2,7nF 1% 250V |
| 2239 | 4822 122 31947 | 100nF 20% 63V |
| 2250 | 4822 121 51115 | 270nF 10% 63V |
| 2251 | 5322 122 31647 | 1nF 10% 63V |
| 2255 | 4822 122 31766 | 120pF 5% 50V |
| 2260 | 4822 122 31947 | 100nF 20% 63V |
| 2270 | 4822 122 31947 | 100nF 20% 63V |
| 2330 | 4822 122 32597 | 6,8nF 10% 63V |
| 2345 | 4822 124 41506 | 47µF 20% 16V |
| 2350 | 4822 124 40849 | 330µF 20% 16V |
| 2351 | 4822 124 41643 | 100µF 20% 16V |
| 2380 | 4822 122 32927 | 220nF |
| 2382 | 4822 122 32927 | 220nF |
| 2384 | 4822 122 32927 | 220nF |
| 2391 | 4822 122 32927 | 220nF |
| 2395 | 4822 122 32927 | 220nF |
| 2397 | 4822 122 32927 | 220nF |

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|---|---|---|
| 2399 | 4822 122 31746 | 1000pF 5% 50V |
| 2404 | 4822 122 31965 | 220pF 5% 63V |
| 2405 | 4822 122 32862 | 10nF 80% 50V |
| 2409 | 4822 122 31965 | 220pF 5% 63V |
| 2410 | 4822 122 32862 | 10nF 80% 50V |
| 2413 | 4822 122 31839 | 82pF 10% 50V |
| 2414 | 4822 122 32862 | 10nF 80% 50V |
| 2415 | 4822 122 32765 | 820pF 10% 63V |
| 2430 | 4822 122 31947 | 100nF 20% 63V |
| 2432 | 4822 122 31947 | 100nF 20% 63V |
| 2434 | 4822 122 31947 | 100nF 20% 63V |
| 2438 | 4822 121 42472 | 10nF 10% 50V |
| 2439 | 4822 121 41856 | 22nF 5% 250V |
| 2440 | 4822 122 31965 | 220pF 5% 63V |
| 2441 | 4822 122 31727 | 470pF 5% 63V |
| 2442 | 4822 124 40242 | 1µF 20% 63V |
| 2446 | 4822 122 31947 | 100nF 20% 63V |
| 2448 | 4822 122 31947 | 100nF 20% 63V |
| 2450 | 4822 122 32856 | 8,2nF 10% 63V |
| 2455 | 4822 122 31972 | 39pF 5% 50V |
| 2459 | 4822 124 41997 | 470µF 10V |
| 2466 | 4822 122 31947 | 100nF 20% 63V |
| 2470 | 4822 124 40435 | 10µF 20% 50V |
| 2604 | 4822 124 40195 | 150µF 20% 16V |
| 2614 | 4822 124 41506 | 47µF 20% 16V |
| 2615 | 4822 124 41576 | 2,2µF 20% 50V |
| 2616 | 4822 122 32927 | 220nF |
| 2618 | 4822 122 32442 | 10nF 50V |
| 2619 | 4822 124 40849 | 330µF 20% 16V |
| 2620 | 4822 122 32442 | 10nF 50V |
| 2621 | 4822 122 31797 | 22nF 10% 63V |
| 2622 | 4822 122 31947 | 100nF 20% 63V |
| 2623 | 4822 122 31797 | 22nF 10% 63V |
| 2627 | 4822 122 32927 | 220nF |

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|---|---|---|
| 3100 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3103 | 4822 051 10821 | 820Ω 2% 0,25W |
| 3104 | 4822 051 10821 | 820Ω 2% 0,25W |
| 3105 | 4822 051 10362 | 3k6 2% 0,25W |
| 3106 | 4822 051 10103 | 10k 2% 0,25W |
| 3107 | 4822 051 10103 | 10k 2% 0,25W |
| 3108 | 4822 051 10103 | 10k 2% 0,25W |
| 3155 | 4822 051 10391 | 390Ω 2% 0,25W |
| 3156 | 4822 051 10122 | 1k2 2% 0,25W |
| 3157 | 4822 100 11391 | 330Ω 30% LIN |
| 3158 | 4822 051 10759 | 75Ω 2% 0,25W |
| 3170 | 4822 051 10112 | 1k1 2% 0,25W |
| 3175 | 4822 051 10621 | 620Ω 2% 0,25W |
| 3196 | 4822 050 11002 | 1k 1% 0,4W |
| 3200 | 4822 051 10103 | 10k 2% 0,25W |
| 3201 | 4822 051 10103 | 10k 2% 0,25W |
| 3202 | 4822 051 10103 | 10k 2% 0,25W |
| 3211 | 4822 051 10103 | 10k 2% 0,25W |
| 3212 | 4822 051 10103 | 10k 2% 0,25W |
| 3214 | 4822 051 10102 | 1k 2% 0,25W |
| 3220 | 4822 051 10512 | 5k1 2% 0,25W |
| 3221 | 4822 116 52233 | 10k 5% 0,5W |
| 3222 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3227 | 4822 116 52299 | 7k 5 5% 0,5W |
| 3228 | 4822 051 10472 | 4k7 2% 0,25W |
| 3231 | 4822 051 10302 | 3k 2% 0,25W |
| 3232 | 4822 051 10229 | 22Ω 2% 0,25W |
| 3233 | 4822 051 10821 | 820Ω 2% 0,25W |
| 3233 | 4822 051 10152 | 1k5 2% 0,25W |
| 3234 | 4822 051 10202 | 2k 2% 0,25W |
| 3235 | 4822 051 10222 | 1k2 2% 0,25W |

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|---|---|---|
| 3236 | 4822 051 10511 | 510Ω 2% 0,25W |
| 3237 | 4822 051 10153 | 15k 2% 0,25W |
| 3238 | 4822 051 10333 | 33k 2% 0,25W |
| 3239 | 4822 100 11319 | 4k7 30% LIN |
| 3241 | 4822 051 10302 | 3k 2% 0,25W |
| 3242 | 4822 050 11002 | 1k 1% 0,4W |
| 3250 | 4822 051 10911 | 910Ω 2% 0,25W |
| 3265 | 4822 051 10104 | 100k 2% 0,25W |
| 3270 | 4822 051 10103 | 10k 2% 0,25W |
| 3275 | 4822 051 10103 | 10k 2% 0,25W |
| 3276 | 4822 051 10102 | 1k 2% 0,25W |
| 3330 | 4822 051 10752 | 7k5 2% 0,25W |
| 3331 | 4822 051 10103 | 10k 2% 0,25W |
| 3332 | 4822 051 10152 | 1k5 2% 0,25W |
| 3335 | 4822 051 10271 | 270Ω 2% 0,25W |
| 3336 | 4822 051 10432 | 4k3 2% 0,25W |
| 3337 | 4822 116 52207 | 1k2 5% 0,5W |
| 3338 | 4822 051 10332 | 3k3 2% 0,25W |
| 3340 | 4822 116 52253 | 2k 5% 0,5W |
| 3345 | 4822 052 10229 | 22Ω 5% 0,33W |
| 3353 | 4822 052 10568 | 5Ω6 5% 0,33W |
| 3354 | 4822 051 10271 | 270Ω 2% 0,25W |
| 3376 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3377 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3378 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3380 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3381 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3382 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3383 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3384 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3385 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3386 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3387 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3388 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3404 | 4822 051 10431 | 430Ω 2% 0,25W |
| 3405 | 4822 051 10271 | 270Ω 2% 0,25W |
| 3410 | 4822 051 10391 | 390Ω 2% 0,25W |
| 3411 | 4822 051 10361 | 360Ω 2% 0,25W |
| 3412 | 4822 051 10361 | 360Ω 2% 0,25W |
| 3412 | 4822 051 10391 | 390Ω 2% 0,25W |
| 3414 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3416 | 4822 051 10182 | 1k8 2% 0,25W |
| 3434 | 4822 051 10473 | 47k 2% 0,25W |
| 3436 | 4822 051 10473 | 47k 2% 0,25W |
| 3437 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3438 | 4822 051 10513 | 51k 2% 0,25W |
| 3440 | 4822 116 52222 | 390Ω 5% 0,5W |
| 3441 | 4822 051 10519 | 51Ω 2% 0,25W |
| 3442 | 4822 051 10919 | 91Ω 2% 0,25W |
| 3444 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3446 | 4822 116 52175 | 100Ω 5% 0,5W |
| 3448 | 4822 051 10392 | 3k9 2% 0,25W |
| 3450 | 4822 051 10681 | 680Ω 2% 0,25W |
| 3450 | 4822 051 10751 | 750Ω 2% 0,25W |
| 3452 | 4822 051 10681 | 680Ω 2% 0,25W |
| 3452 | 4822 051 10751 | 750Ω 2% 0,25W |
| 3454 | 4822 051 10681 | 680Ω 2% 0,25W |
| 3454 | 4822 051 10751 | 750Ω 2% 0,25W |
| 3460 | 4822 116 52217 | 270Ω 5% 0,5W |
| 3461 | 4822 116 52259 | 2k4 5% 0,5W |
| 3462 | 4822 051 10333 | 33k 2% 0,25W |
| 3463 | 4822 116 52299 | 7k5 5% 0,5W |
| 3464 | 4822 051 10472 | 4k7 2% 0,25W |
| 3465 | 4822 051 10821 | 820Ω 2% 0,25W |
| 3471 | 4822 051 10103 | 10k 2% 0,25W |
| 3472 | 4822 051 10224 | 220k 2% 0,25W |
| 3473 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3473 | 4822 051 10102 | 1k 2% 0,25W |

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**Jumpers**

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## PIP panel J

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|---|---|---|
| 3600 | 4822 051 10103 | 10k 2% 0,25W |
| 3601 | 4822 051 10103 | 10k 2% 0,25W |
| 3602 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3603 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3604 | 4822 052 10158 | 1Ω5 5% 0,33W |
| 3605 | 4822 051 10223 | 22k 2% 0,25W |
| 3610 | 4822 100 11319 | 4k7 30% LIN |
| 3611 | 4822 051 10332 | 3k3 2% 0,25W |
| 3612 | 4822 051 10272 | 2k7 2% 0,25W |
| 3613 | 4822 051 10103 | 10k 2% 0,25W |
| 3614 | 4822 051 10123 | 12k 2% 0,25W |
| 3615 | 4822 051 10822 | 8k2 2% 0,25W |
| 3616 | 4822 116 52229 | 750Ω 5% 0,5W |
| 3617 | 4822 051 10751 | 750Ω 2% 0,25W |
| 3618 | 4822 052 10568 | 5Ω6 5% 0,33W |
| 3619 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3620 | 4822 051 20222 | 2k2 5% 0,1W |
| 3621 | 4822 051 10105 | 1M 5% 0,25W |
| 3622 | 4822 051 10272 | 2k7 2% 0,25W |
| 3624 | 4822 051 10272 | 2k7 2% 0,25W |
| 3625 | 4822 051 10511 | 510Ω 2% 0,25W |
| 3630 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3631 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3632 | 4822 051 10102 | 1k 2% 0,25W |
| 3633 | 4822 051 10104 | 100k 2% 0,25W |
| 3634 | 4822 051 10104 | 100k 2% 0,25W |
| 3635 | 4822 051 10562 | 5k6 2% 0,25W |
| 3636 | 4822 051 10911 | 910Ω 2% 0,25W |
| 3637 | 4822 051 20183 | 18k 5% 0,1W |
| 3638 | 4822 051 10362 | 3k6 2% 0,25W |
| 3997 | 4822 051 10479 | 47Ω 2% 0,25W |

**Jumpers**

| | | |
|---|---|---|
| 4001 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4002 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4003 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4005 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4007 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4009 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4011 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4012 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4013 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4014 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4015 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4016 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4017 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4018 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4019 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4020 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4021 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4022 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4024 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4025 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4026 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4027 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4028 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4029 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4046 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4048 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4049 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4403 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4404 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4410 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4415 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4417 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4418 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4419 | 4822 051 10008 | 0Ω 5% 0,25W |

**Jumpers**

| | | |
|---|---|---|
| 4420 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4421 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4631 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4632 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4633 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4634 | 4822 051 10008 | 0Ω 5% 0,25W |

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|---|---|---|
| 5118 | 4822 157 60435 | 10,3μH 6% |
| 5155 | 4822 157 60433 | 7,2μH 6% |
| 5157 | 4822 157 60434 | 9,4μH 6% |
| 5170 | 4822 157 60432 | 10,3μH |
| 5175 | 4822 157 60432 | 10,3μH |
| 5190 | 4822 157 60432 | 10,3μH |
| 5400 | 4822 157 50943 | 12μH 10% |
| 5402 | 4822 157 50943 | 12μH 10% |
| 5403 | 4822 157 52333 | 100μH |
| 5406 | 4822 157 50943 | 12μH 10% |
| 5408 | 4822 157 50943 | 12μH 10% |
| 5410 | 4822 157 50943 | 12μH 10% |

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|---|---|---|
| 6300 | 4822 130 80906 | LLZ-C7V5 |
| 6301 | 4822 130 80446 | LL4148 |

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|---|---|---|
| 7103 | 5322 130 41982 | BC848B |
| 7105 | 5322 130 41982 | BC848B |
| 7125 | 4822 209 63927 | TDA4554/V1 |
| 7126 | 4822 209 30389 | TDA4510/V8 |
| 7200 | 5322 130 41982 | BC848B |
| 7210 | 5322 130 41982 | BC848B |
| 7233 | 5322 130 41982 | BC848B |
| 7234 | 5322 130 41982 | BC848B |
| 7235 | 5322 130 41982 | BC848B |
| 7330 | 5322 130 41982 | BC848B |
| 7335 | 5322 130 41982 | BC848B |
| 7337 | 5322 130 41982 | BC848B |
| 7338 | 5322 130 41982 | BC848B |
| 7350 | 4822 130 42616 | BC818-40 |
| 7381 | 5322 130 42012 | BC858 |
| 7385 | 5322 130 42012 | BC858 |
| 7387 | 5322 130 42012 | BC858 |
| 7400 | 5322 130 41983 | BC858B |
| 7402 | 5322 130 41983 | BC858B |
| 7404 | 5322 130 41983 | BC858B |
| 7406 | 4822 209 62473 | SDA9087 |
| 7408 | 4822 209 63291 | SDA9088/2R |
| 7410 | 4822 209 63644 | SDA9086-3 |
| 7610 | 4822 209 30393 | TDA8349A/N2 |
| 7630 | 4822 209 30395 | SAA1300AQ/N6 |
| 7755 | 4822 209 72363 | TDA2579A/N8 |

# Spare parts list / Stückliste / Liste

## Picture tube panel E

**Connectors**

| | | |
|---|---|---|
| | 4822 265 20509 | 2P male grey |
| | 4822 265 40596 | 2P male |
| | 4822 267 40985 | 6P male black |
| | 4822 290 40295 | 7P male grey |

**Various parts**

| | | |
|---|---|---|
| | 4822 492 70788 | spring fix IC |
| | 4822 255 70261 | picture tube socket |
| 1030 | 4822 212 23711 | PTP 25"-28" |
| 1030 | 4822 212 23953 | PIP 33" |

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|---|---|---|
| 2700 | 4822 122 33496 | 100nF 10% 63V |
| 2701 | 4822 122 32507 | 6,8pF 5% 50V |
| 2703 | 4822 122 33125 | 180pF 10% 63V |
| 2704 | 4822 124 42182 | 3,3µF 20% 250V |
| 2705 | 4822 124 40272 | 33µF 20% 16V |
| 2706 | 4822 122 31797 | 22nF 10% 63V |
| 2707 | 4822 121 51562 | 33nF 10% 1600V |
| 2708 | 5322 122 31842 | 330pF 5% 63V |
| 2709 | 4822 122 31825 | 27pF 10% 50V |
| 2710 | 4822 122 31774 | 56pF 5% 50V |
| 2711 | 4822 122 32507 | 6,8pF 5% 50V |
| 2712 | 4822 126 11175 | 22pF 5% 50V |
| 2713 | 4822 121 41156 | 68nF 10% 250V |
| 2715 | 4822 121 41156 | 68nF 10% 250V |
| 2716 | 4822 122 31797 | 22nF 10% 63V |
| 2717 | 4822 121 41156 | 68nF 10% 250V |
| 2720 | 4822 122 31774 | 56pF 5% 50V |
| 2721 | 4822 122 32507 | 6,8pF 5% 50V |
| 2726 | 4822 122 31797 | 22nF 10% 63V |
| 2730 | 4822 122 31774 | 56pF 5% 50V |
| 2731 | 5322 122 31647 | 1nF 10% 63V |
| 2741 | 5322 122 31647 | 1nF 10% 63V |
| 2751 | 5322 122 31647 | 1nF 10% 63V |
| 2760 | 4822 122 31174 | 2,7nF 10% 500V |

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|---|---|---|
| 3537 | 4822 052 11128 | 1Ω2 5% 0,5W |
| 3700 | 4822 051 10182 | 1k8 2% 0,25W |
| 3701 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3702 | 4822 051 10102 | 1k 2% 0,25W |
| 3704 | 4822 051 10272 | 2k7 2% 0,25W |
| 3705 | 4822 051 10332 | 3k3 2% 0,25W |
| 3706 | 4822 050 21504 | 150k 1% 0,6W |
| 3708 | 4822 111 50518 | 1k5 5% 0,5W |
| 3710 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3711 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3712 | 4822 051 10272 | 2k7 2% 0,25W |
| 3714 | 4822 051 10272 | 2k7 2% 0,25W |
| 3715 | 4822 051 10332 | 3k3 2% 0,25W |
| 3716 | 4822 050 21504 | 150k 1% 0,6W |
| 3718 | 4822 111 50518 | 1k5 5% 0,5W |
| 3719 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3720 | 4822 051 10823 | 82k 2% 0,25W |
| 3721 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3724 | 4822 051 10272 | 2k7 2% 0,25W |
| 3725 | 4822 051 10332 | 3k3 2% 0,25W |
| 3726 | 4822 050 21204 | 120k 1% 0,6W |
| 3727 | 4822 111 50518 | 1k5 5% 0,5W |
| 3728 | 4822 111 50518 | 1k5 5% 0,5W |
| 3730 | 4822 111 50518 | 1k5 5% 0,5W |
| 3731 | 4822 052 10279 | 27Ω 5% 0,33W |

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|---|---|---|
| 3733 | 4822 052 10189 | 18Ω 5% 0,33W |
| 3734 | 4822 051 10114 | 110k 2% 0,25W |
| 3735 | 4822 051 10103 | 10k 2% 0,25W |
| 3736 | 4822 051 10333 | 33k 2% 0,25W |
| 3737 | 4822 051 10203 | 20k 2% 0,25W |
| 3738 | 4822 116 52304 | 82k 5% 0,5W |
| 3739 | 4822 116 52188 | 27Ω 5% 0,5W |
| 3739 | 4822 116 52193 | 39Ω 5% 0,5W |
| 3740 | 4822 051 10114 | 110k 2% 0,25W |
| 3741 | 4822 051 10124 | 120k 2% 0,25W |
| 3742 | 4822 051 10333 | 33k 2% 0,25W |
| 3743 | 4822 051 10333 | 33k 2% 0,25W |
| 3761 | 4822 051 10152 | 1k5 2% 0,25W |
| 3761 | 4822 051 10332 | 3k3 2% 0,25W |

**Jumpers**

| | | |
|---|---|---|
| 4701 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4702 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4703 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4709 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4714 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4743 | 4822 051 10008 | 0Ω 5% 0,25W |

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| | | |
|---|---|---|
| 5700 | 4822 157 60155 | 33µH 7,5% |
| 5701 | 4822 157 60155 | 33µH 7,5% |

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| | | |
|---|---|---|
| 6700 | 4822 130 80879 | LLZ-C3V0 |
| 6701 | 4822 130 80877 | BAV103 |
| 6702 | 4822 130 80877 | BAV103 |
| 6703 | 4822 130 80877 | BAV103 |
| 6704 | 4822 130 80877 | BAV103 |
| 6705 | 4822 130 80877 | BAV103 |
| 6706 | 4822 130 80877 | BAV103 |
| 6707 | 4822 130 82345 | LLZ-C22 |
| 6708 | 4822 130 30842 | BAV21 |
| 6709 | 4822 130 30842 | BAV21 |
| 6711 | 4822 130 30842 | BAV21 |
| 6712 | 4822 130 80877 | BAV103 |
| 6713 | 4822 130 80877 | BAV103 |
| 6714 | 4822 130 32896 | BYD33M |
| 6715 | 4822 130 82969 | BZD23-C24 |

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| | | |
|---|---|---|
| 7704 | 4822 130 60373 | BC856B |
| 7705 | 4822 209 63898 | TDA6111Q/N1 |
| 7705 | 4822 209 30417 | TDA6111Q/N2 |
| 7706 | 4822 209 63898 | TDA6111Q/N1 |
| 7706 | 4822 209 30417 | TDA6111Q/N2 |
| 7707 | 4822 209 63898 | TDA6111Q/N1 |
| 7707 | 4822 209 30417 | TDA6111Q/N2 |
| 7708 | 4822 130 41646 | BF423 |
| 7709 | 4822 130 41646 | BF423 |
| 7710 | 4822 130 41646 | BF423 |

## NICAM sound module K

**Connectors**

| | | |
|---|---|---|
| | 4822 265 41087 | 9P male |

**Various parts**

| | | |
|---|---|---|
| 1001 | 4822 242 81128 | cryst. 17.470MHz |
| 1002 | 4822 242 72301 | filter TH316BOM - 20800DAF |
| 1002 | 4822 242 72303 | filter TH316BQM |
| 1003 | 4822 242 81126 | cryst. 11.170MHz |
| 1003 | 4822 242 81127 | cryst. 13.100MHz |
| 1106 | 4822 242 72303 | filter TH316BQM |
| 1600 | 4822 212 23907 | NICAM PAL BG |
| 1600 | 4822 212 23908 | NICAM PAL I |

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| | | |
|---|---|---|
| 2000 | 4822 122 31947 | 100nF 20% 63V |
| 2001 | 4822 124 40433 | 47µF 20% 25V |
| 2002 | 4822 122 31797 | 22nF 10% 63V |
| 2003 | 4822 122 31797 | 22nF 10% 63V |
| 2004 | 4822 122 31768 | 180pF 5% 50V |
| 2005 | 4822 122 31768 | 180pF 5% 50V |
| 2006 | 5322 122 31842 | 330pF 5% 63V |
| 2007 | 4822 122 32597 | 6,8nF 10% 63V |
| 2008 | 4822 122 31808 | 150pF 10% 50V |
| 2009 | 4822 122 32442 | 10nF 50V |
| 2010 | 4822 122 31808 | 150pF 10% 50V |
| 2011 | 4822 122 31766 | 120pF 5% 50V |
| 2012 | 4822 121 41854 | 150nF 5% 63V |
| 2013 | 4822 122 31746 | 1000pF 5% 50V |
| 2014 | 4822 122 32442 | 10nF 50V |
| 2015 | 4822 125 50045 | 20pF trim. |
| 2016 | 4822 122 31961 | 68pF 5% 63V |
| 2017 | 4822 121 42408 | 220nF 5% 63V |
| 2018 | 4822 122 32442 | 10nF 50V |
| 2019 | 4822 122 31797 | 22nF 10% 63V |
| 2020 | 4822 124 40433 | 47µF 20% 25V |
| 2021 | 4822 122 31782 | 15nF 10% 50V |
| 2021 | 4822 122 32856 | 8,2nF 10% 63V |
| 2022 | 4822 122 31981 | 33nF ±0,5pF 50V |
| 2022 | 4822 122 31759 | 18nF |
| 2023 | 4822 122 31981 | 33nF ±0,5pF 50V |
| 2023 | 4822 122 31759 | 18nF |
| 2024 | 4822 122 31782 | 15nF 10% 50V |
| 2024 | 4822 122 32856 | 8,2nF 10% 63V |
| 2025 | 4822 122 31797 | 22nF 10% 63V |
| 2026 | 4822 124 40433 | 47µF 20% 25V |
| 2027 | 4822 122 31773 | 560pF 5% 50V |
| 2028 | 4822 126 10171 | 2,7nF 5% 50V |
| 2029 | 4822 122 32999 | 2,2nF 5% 50V |
| 2030 | 4822 122 32999 | 2,2nF 5% 50V |
| 2031 | 4822 126 10171 | 2,7nF 5% 50V |
| 2032 | 4822 122 31773 | 560pF 5% 50V |
| 2033 | 4822 126 11492 | 220nF 10% 63V |
| 2034 | 4822 126 11492 | 220nF 10% 63V |
| 2035 | 4822 122 31746 | 1000pF 5% 50V |
| 2036 | 4822 122 32442 | 10nF 50V |
| 2037 | 4822 122 32442 | 10nF 50V |
| 2038 | 4822 122 31797 | 22nF 10% 63V |
| 2039 | 4822 126 11691 | 150nF 10% 63V |
| 2040 | 4822 122 33669 | 150nF 20% 50V |
| 2041 | 5322 122 31647 | 1nF 10% 63V |
| 2042 | 4822 126 10183 | 330pF 10% 63V |
| 2043 | 5322 122 31647 | 1nF 10% 63V |
| 2044 | 5322 122 31647 | 1nF 10% 63V |
| 2050 | 4822 124 40433 | 47µF 20% 25V |
| 2051 | 5322 122 31647 | 1nF 10% 63V |
| 2245 | 5322 122 31647 | 1nF 10% 63V |
| 2246 | 5322 122 31647 | 1nF 10% 63V |

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| | | |
|---|---|---|
| 3000 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3002 | 4822 051 10332 | 3k3 2% 0,25W |
| 3003 | 4822 051 10332 | 3k3 2% 0,25W |
| 3004 | 4822 051 10104 | 100k 2% 0,25W |
| 3005 | 4822 051 10823 | 82k 2% 0,25W |
| 3007 | 4822 051 10223 | 22k 2% 0,25W |
| 3008 | 4822 051 10223 | 22k 2% 0,25W |
| 3009 | 4822 051 10392 | 3k9 2% 0,25W |
| 3010 | 4822 051 10104 | 100k 2% 0,25W |
| 3011 | 4822 051 10104 | 100k 2% 0,25W |
| 3012 | 4822 053 20106 | 10M 5% 0,25W |
| 3013 | 4822 051 10824 | 820k 2% 0,25W |
| 3014 | 4822 051 10103 | 10k 2% 0,25W |
| 3015 | 4822 051 10682 | 6k8 2% 0,25W |
| 3015 | 4822 051 10123 | 12k 2% 0,25W |
| 3016 | 4822 051 10122 | 1k2 2% 0,25W |
| 3016 | 4822 051 20222 | 2k2 5% 0,1W |
| 3017 | 4822 051 10122 | 1k2 2% 0,25W |
| 3017 | 4822 051 20222 | 2k2 5% 0,1W |
| 3018 | 4822 051 10682 | 6k8 2% 0,25W |
| 3018 | 4822 051 10123 | 12k 2% 0,25W |
| 3019 | 4822 051 10752 | 7k5 2% 0,25W |
| 3019 | 4822 051 10562 | 5k6 2% 0,25W |
| 3020 | 4822 051 10472 | 4k7 2% 0,25W |
| 3021 | 4822 051 10472 | 4k7 2% 0,25W |
| 3022 | 4822 051 10472 | 4k7 2% 0,25W |
| 3023 | 4822 051 10472 | 4k7 2% 0,25W |
| 3024 | 4822 051 10184 | 180k 2% 0,25W |
| 3025 | 4822 051 10184 | 180k 2% 0,25W |
| 3026 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3027 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3028 | 4822 051 10103 | 10k 2% 0,25W |
| 3029 | 4822 052 10109 | 10Ω 5% 0,33W |
| 3030 | 4822 051 10102 | 1k 2% 0,25W |
| 3031 | 4822 051 10102 | 1k 2% 0,25W |
| 3032 | 4822 051 10569 | 56Ω 2% 0,25W |
| 3033 | 4822 051 20222 | 2k2 5% 0,1W |
| 3034 | 4822 051 10431 | 430Ω 2% 0,25W |
| 3035 | 4822 051 10241 | 240Ω 2% 0,25W |
| 3036 | 4822 051 10102 | 1k 2% 0,25W |
| 3037 | 4822 051 10159 | 15Ω 2% 0,25W |
| 3049 | 4822 051 10223 | 22k 2% 0,25W |
| 3050 | 4822 051 10103 | 10k 2% 0,25W |
| 3099 | 4822 051 10101 | 100Ω 2% 0,25W |
| 3099 | 4822 116 90536 | 120Ω 1% 0,125W |

**Jumpers**

| | | |
|---|---|---|
| 4002 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4003 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4005 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4052 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4053 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4054 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4055 | 4822 051 10008 | 0Ω 5% 0,25W |
| 4100 | 4822 051 10008 | 0Ω 5% 0,25W |

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| | | |
|---|---|---|
| 5000 | 4822 157 50975 | 1mH 10% |
| 5001 | 4822 157 50975 | 1mH 10% |
| 5002 | 4822 157 51235 | 4,7µH 10% |
| 5003 | 4822 157 51235 | 4,7µH 10% |

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| | | |
|---|---|---|
| 6000 | 4822 130 30621 | 1N4148 |
| 6005 | 4822 209 30911 | OF4076 |
| 6006 | 5322 130 31684 | BB809 |
| 6050 | 4822 130 80446 | LL4148 |

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| | | |
|---|---|---|
| 7000 | 4822 209 30909 | TDA8732/C1 |
| 7001 | 4822 209 30914 | SAA7280/M3 |
| 7002 | 4822 209 83163 | LM833N |
| 7003 | 4822 209 83163 | LM833N |
| 7004 | 5322 209 10576 | 4053B |
| 7007 | 4822 209 73236 | TDA1543/N2 |
| 7008 | 5322 130 42755 | BC847C |
| 7009 | 4822 130 60887 | BF840 |
| 7050 | 5322 130 42136 | BC848C |

# Spare parts list / Stückliste / Liste

## Y/C detector

**Connectors**

| | | |
|---|---|---|
| | 4822 265 40503 | 5P female gold |
| | 4822 265 30431 | 3P female gold |

**Various parts**

| | | |
|---|---|---|
| 1231 | 4822 242 80364 | filter 4,43MHz |

| | | |
|---|---|---|
| 2225 | 4822 124 40196 | 220μF 20% 16V |
| 2226 | 4822 122 32927 | 220nF |
| 2228 | 4822 122 32927 | 220nF |
| 2235 | 4822 122 31965 | 220pF 5% 63V |
| 2236 | 4822 122 31772 | 47pF 5% 50V |
| 2237 | 4822 122 32142 | 270pF 5% 63V |
| 2238 | 4822 122 31768 | 180pF 5% 50V |
| 2239 | 4822 122 31947 | 100nF 20% 63V |
| 2244 | 4822 124 20722 | 1μF 10% 63V |
| 2246 | 4822 122 31947 | 100nF 20% 63V |
| 2247 | 4822 122 31766 | 120pF 5% 50V |
| 2261 | 4822 124 20678 | 47μF 10% 10V |
| 2262 | 4822 122 31808 | 150pF 10% 50V |
| 2269 | 4822 124 20726 | 4,7μF 10% 63V |

| | | |
|---|---|---|
| 3200 | 4822 050 11002 | 1k 1% 0,4W |
| 3201 | 4822 116 83006 | 2M7 5% 0,5W |
| 3203 | 4822 051 10563 | 56k 2% 0,25W |
| 3204 | 4822 051 10103 | 10k 2% 0,25W |
| 3212 | 4822 051 10751 | 750Ω 2% 0,25W |
| 3213 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3213 | 4822 051 10153 | 15k 2% 0,25W |
| 3214 | 4822 051 10153 | 15k 2% 0,25W |
| 3221 | 4822 051 10472 | 4k7 2% 0,25W |
| 3223 | 4822 116 52203 | 91Ω 5% 0,5W |
| 3225 | 4822 116 52219 | 330Ω 5% 0,5W |
| 3226 | 4822 116 52243 | 1k5 5% 0,5W |
| 3227 | 4822 051 10112 | 1k1 2% 0,25W |
| 3228 | 4822 051 10474 | 470k 2% 0,25W |
| 3229 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3230 | 4822 051 10102 | 1k 2% 0,25W |
| 3231 | 4822 051 10681 | 680Ω 2% 0,25W |
| 3236 | 4822 051 10331 | 330Ω 2% 0,25W |
| 3250 | 4822 051 10151 | 150Ω 2% 0,25W |
| 3258 | 4822 051 10102 | 1k 2% 0,25W |
| 3272 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3278 | 4822 051 10472 | 4k7 2% 0,25W |
| 3280 | 4822 051 10102 | 1k 2% 0,25W |
| 3282 | 4822 051 10103 | 10k 2% 0,25W |
| 3283 | 4822 051 10472 | 4k7 2% 0,25W |
| 3284 | 4822 051 10102 | 1k 2% 0,25W |
| 3289 | 4822 051 10102 | 1k 2% 0,25W |
| 3302 | 4822 051 10102 | 1k 2% 0,25W |
| 3307 | 4822 051 10474 | 470k 2% 0,25W |
| 3308 | 4822 051 10471 | 470Ω 2% 0,25W |
| 3309 | 4822 051 10008 | 0Ω 5% 0,25W |
| 3319 | 4822 051 10102 | 1k 2% 0,25W |

| | | |
|---|---|---|
| 5200 | 4822 157 62824 | 7,5μH |
| 5201 | 4822 157 62824 | 7,5μH |
| 5202 | 4822 157 60122 | 4,7μH 10% |

| | | |
|---|---|---|
| 6258 | 4822 130 80905 | LLZ-F5V1 |

| | | |
|---|---|---|
| 7226 | 5322 130 41983 | BC858B |
| 7228 | 5322 130 41982 | BC848B |
| 7262 | 5322 130 41983 | BC858B |
| 7263 | 5322 130 41982 | BC848B |
| 7264 | 4822 130 42353 | BFS19 |
| 7266 | 5322 130 42136 | BC848C |
| 7267 | 4822 130 42513 | BC858C |
| 7274 | 5322 130 42136 | BC848C |
| 7275 | 4822 130 42513 | BC858C |
| 7276 | 5322 130 41983 | BC858B |
| 7277 | 5322 130 41982 | BC848B |
| 7278 | 5322 130 41982 | BC848B |

**Colour television**

**FL1.1/FL1.2**

Service
Service
**Service**

# Circuit Description

## Contents

1. Introduction
2. Control
3. The tuner/IF
4. The audio path
5. The video path
6. Synchronisation and deflection
7. Power supply
8. Picture in Picture

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GB 4822 727 18791

# 1. Introduction

Contents

1.1 Block diagram

One of the problems still currently experienced with television receivers is surface flicker. Surface flicker is caused because the repetition frequency of television receivers (50 Hz) with large bright surfaces (in particular when seen out of the corner of the eye) is visible to the human eye. The effect is a problem particularly with larger screen sizes (and thus also with larger brightness surfaces).
The solution to this problem is to increase the frame frequency. Although an increase to, for example, 60 Hz is sufficient to make the effect invisible, in practice it is simpler to double the frame frequency. The 100 Hz receiver thus produced reproduces each picture twice in the time it takes the 50 Hz receiver to reproduce the original picture.

The FL1.1 is the first mass-produced 100 Hz receiver.
With the FL1.2 Philips is taking another step towards higher definition television: the 16/9 (wide screen) TV receiver.

Chassis FL1.1 is suitable for the control of a 21", 25", 28" or 33" 100 Hz picture tube; chassis FL1.2 is intended for the control of a 36" 16:9 100 Hz picture tube. Units with a FL1.2 chassis are only produced in the symmetric version with separate mid-range and treble speakers.
When reading this description you will come across a number of circuits which have already been covered in the description of FL1.0 (4822 727 18238).
Of course, ample attention is paid to the new circuit parts.

In this description the circuits of chassis FL1.2 are described. Any differences with chassis FL1.1 are indicated where applicable.
For the diagrams and PCB layouts, see the service manual FL1.1 AA or FL1.2 AA.

# 2 Control

Contents

2.1 Control menus
2.2 Service default mode
2.3 Error messages

The control of sets having a FL1.1/FL1.2 chassis consists of a control panel which houses a microprocessor, an external ROM IC (with system software), an external RAM IC and a few LATCH ICs for the control of inputs and outputs.
This control panel is connected to the chassis via a 40-pin socket (on the small signal PC board). After the set is switched on with the mains switch (hardware reset), a test programme is started before the control programme. During the test programme all internal and external RAMs are tested as well as all circuits connected via the $I^2C$ bus.
If a fault is detected, it will be indicated by a combination of LEDs which light up on the control panel.
In the case of an error message the LEDs flash to indicate the difference with normal use.
The inputs and outputs may be used for: RC5 reception, keyboard sensing, stand-by, anti-plop, crispening, status signals, etc.

The control in the FL1.1/FL1.2 has been designed in such a way that the functions which are used daily are directly accessible, and the functions which are used less frequently can be operated via a menu. A menu is a table with a number of options (max. 5 per table) that can be displayed on the screen.
The desired option can be selected by means of the coloured keys (red = a, green = b, yellow = c, blue = d, white = e) on the remote control and then adjusted or activated with the + or - keys of the menu part.
Several menu screens are normally needed for the operation of one function.

On the local keyboard, volume +/- and programme +/- are the only functions that are directly accessible.

On the remote control unit the following functions are directly accessible: volume +/-, programme +/-, -/-- digit entry, mute, personal preference (PP), stand-by, OSD on/off and furthermore all PIP and teletext functions and a selection of VCR functions.

## 2.1 Control menus

For the functions that are used less frequently the FL1.0 has 4 menu inputs of which only the main menu is accessible via the remote control.
The 4 menus are:
1) the language menu,
2) the installation menu,
3) the main menu,
4) the service menu.

For the operation of the language-, installation- and main menu see the direction for use or the diagramms in the service manual.

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### The service menu

This menu is used in the factory to store the characteristic data of a set (multi B/G, only UHF, PIP, NICAM, etc.). The service menu is switched on by connecting pins S23 and S on the small-signal panel briefly with each other.
In the Service Mode the following menu appears in the picture:

| SERVICE "YY-MM-DD" | | |
|---|---|---|
| a | Option 1 | 026 |
| b | Option 2 | 016 |
| c | Green | 040 |
| d | Bleu | 039 |

In this menu "YY-MM-DD" is the release date of the softwa which is present in the set. The desired adjustment can be selected with the aid of menu keys a, b or c on the remote control.
When the "PP store" key on the local keyboard is pressed, the adjusted values are stored in the memory and the Servic Mode is left.

If the service menu does not appear on the screen, the parental mode may have been activated (it must not be activated).
By pressing the <STORE PP> key on the local control pane the data are stored and the menu screen disappears.

## 2.2 Service default mode

This mode has been designed for measuring or test purpose and is activated by interconnecting briefly the pins S24 and S25 (on the small signal PC board) in the set.

If this does not bring you in the service default mode, the parental mode may have been activated (it must not be activated).
When this mode is activated, the set will be tuned automatically to a frequency of 475.25 MHz (system I for UK, system L for the French-multi and system B/G for all other multi sets). All linear functions for picture and sound are set to mid-position (except for volume, which is set to low). However, as the set can still be operated normally, these settings may be changed.

SERVICE
00 <-- 00 <-- 05 <-- 06 <-- 05

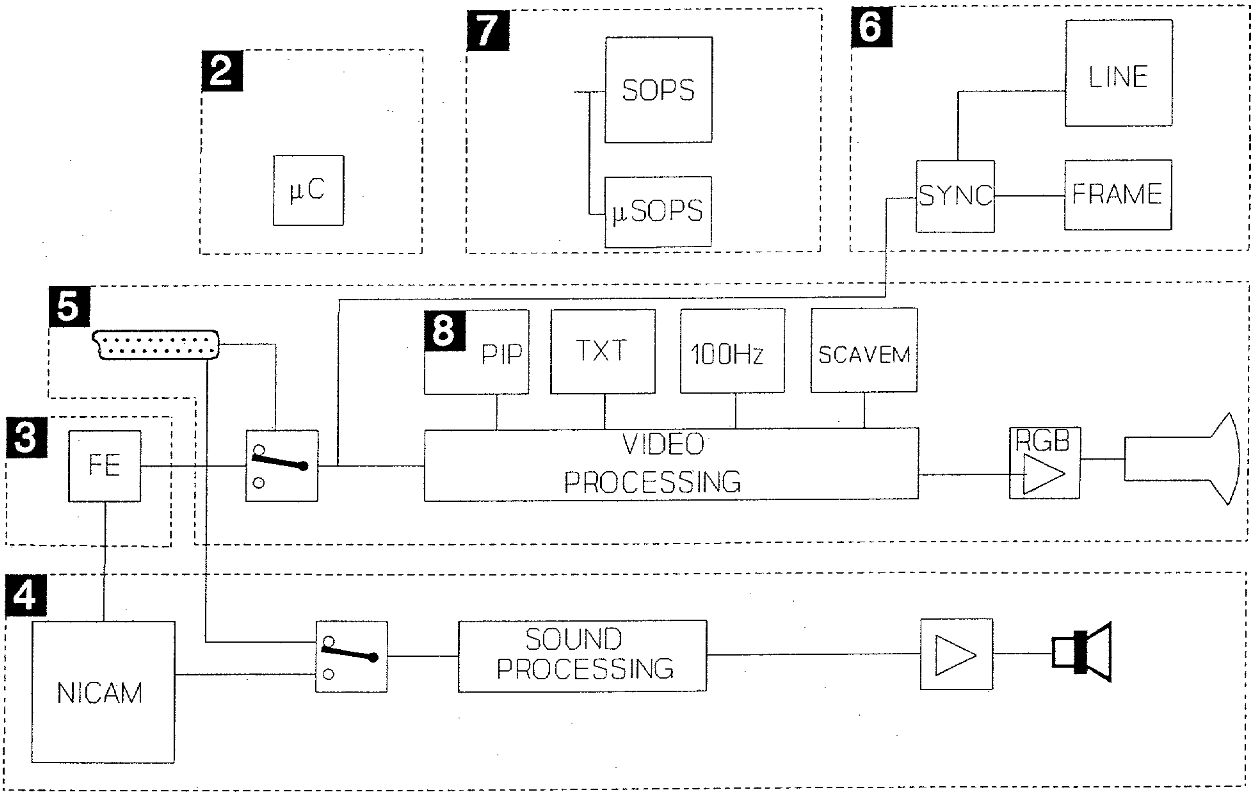
Upon activation, not only the word "SERVICE" is displayed, but also 5 two-digit numbers which indicate the last 5 error messages detected by the control.
These last 5 error messages are stored in a shift register. Th five numbers may be identical, caused by an intermittent fault.
If the menu is exited by means of the <STAND-BY> key, the buffer containing these 5 last error messages will be cleared.

# 1.1 Block diagram

Figure 1.1 shows the block diagram of this FL1.2 television receiver. For each block see the section in this description which describes the circuits used.

The input signals are supplied via the antenna connection (terrestrial) or via the euroconnector (scart) connections. In the front-end (channel selector/intermediate-frequency combination) the high-frequency antenna signals are demodulated and converted into CVBS audio signals. The sound demodulation also takes place here. The sound signals go to the stereo decoder, after which they are supplied to the source selector switch. NICAM sound demodulation takes place on units with NICAM.

After the source selector switches, the audio signals go to the audio signal processing unit (IC/bass/treble/balance, etc.), before continuing to the sound output amplifiers and surround sound output amplifier.


2
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SOPS
µSOPS
6
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SYNC
FRAME
5
8
PIP
TXT
100Hz
SCAVEM
3
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VIDEO PROCESSING
RGB
4
NICAM
SOUND PROCESSING

Fig. 1.1

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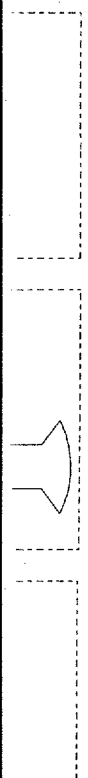
surround



The video signal selected continues to the video signal processing unit. Here the PIP picture is generated, Teletext acquisition takes place, 100 Hz signal processing and (for chassis FL1.2) extra SCAVEM. SCAVEM stands for scan velocity modulation; here the white to black transitions of the picture are accelerated, which results in a sharper picture. The RGB output signals go to the picture tube via the RGB amplifiers on the picture tube panel.

The operating unit controls the whole system. Operating commands may be given via the local keyboard or via the remote control. The various circuits of the unit are controlled via the $I^2C$ bus.

Just as with other FL1 units, the main power supply is of the SOPS type. Here also the complete primary and secondary control circuit is on a separate module. The standby supply voltage is supplied by a separate transformer (µSOPS).

The DAF panel is in the line frequency part (in chassis FL1.2). DAF is an abbreviation for dynamic astigmatic focusing; here the focusing voltage is adjusted continuously, so that the picture is always in focus even in the corners.

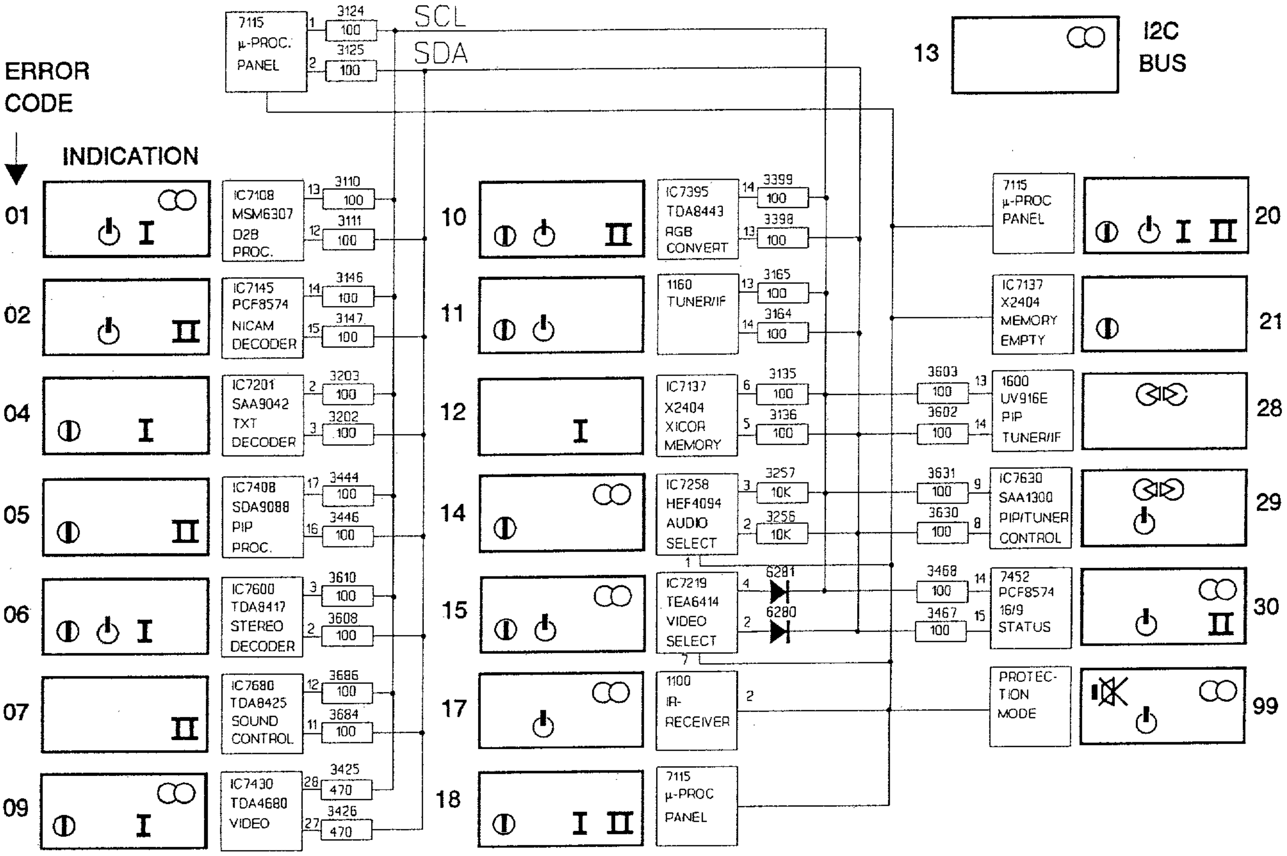
The -(R-Y) and -(B-Y) output signals of the delay lines are sen to the high-end box. The CVBS/Y signal, coming from the video source selector switch, is sent to the high-end box via a sharpness circuit, a switchable chroma bandstop filter and the adjustable delay line in IC-7324.

In the high-end box these signals are converted into video signals with a frame frequency of 100 Hz. The Y signal produced and the colour difference signals are finally supplied to IC7430 (TDA4680), the video controller, which converts the signals supplied into RGB signals. There are also separate RGB inputs for RGB signals from EXT 1 or PIP and for TXT signals. In addition, the brightness, contrast and colour saturation control, and also a cut-off point stabilisation take place in the video control IC. The sharpness of the brightness transitions is also improved by the SCAVEM panel using the Y signal.

EXT3 SVHS
The luminance signal is supplied to pin 1 of IC7219.
The chrominance signal is supplied to pin 20 of IC7219.
A CVBS signal is formed with TS7244 and TS7243 from the SVHS chrominance and luminance signals for the PIP module.

## 2.3 Error messages

The following error messages are indicated by means of a combination of flashing LEDs and, in the "service default mode", by means of numbers.

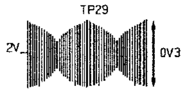

ERROR CODE
INDICATION
I2C BUS
SCL
SDA
7115 µ-PROC. PANEL
3124 100
3125 100
13
01
IC7108 MSM6307 D2B PROC.
3110 100
3111 100
02
IC7145 PCF8574 NICAM DECODER
3146 100
3147 100
04
IC7201 SAA9042 TXT DECODER
3203 100
3202 100
05
IC7408 SDA9088 PIP PROC.
3444 100
3446 100
06
IC7600 TDA8417 STEREO DECODER
3610 100
3608 100
07
IC7680 TDA8425 SOUND CONTROL
3686 100
3684 100
09
IC7430 TDA4680 VIDEO
3425 470
3426 470
10
IC7395 TDA8443 RGB CONVERT
3399 100
3398 100
11
1160 TUNER/IF
3165 100
3164 100
12
IC7137 X2404 XICOR MEMORY
3135 100
3136 100
14
IC7258 HEF4094 AUDIO SELECT
3257 10K
3256 10K
15
IC7219 TEA6414 VIDEO SELECT
6281
6280
17
1100 IR-RECEIVER
18
7115 µ-PROC PANEL
20
7115 µ-PROC PANEL
21
IC7137 X2404 MEMORY EMPTY
28
1600 UV916E PIP TUNER/IF
3603 100
3602 100
29
IC7630 SAA1300 PIP/TUNER CONTROL
3631 100
3630 100
30
7452 PCF8574 16/9 STATUS
3468 100
3467 100
99
PROTEC-TION MODE

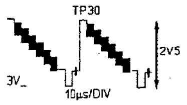
# 3. The tuner / IF combination

Contents

3.1 The tuner part
3.2 The IF circuitry

FQ844 PAL I
FQ816/IF PAL BG
SECAM BG
FQ816ME/IF PAL BG
SECAM BGL
NTSC M
FQ816MF/IF PAL BGI
SECAM BGLL'





In FL1.1/FL1.2 4 possible tuner/IF (= intermediate frequency) combinations can be used depending of the system execution of the set. In this description the most extended version (FQ-816ME/IF) will be described.
The tuner/IF combination (front-end) consists of 2 parts, the tuner part and an IF part.

The block diagram is drawn in Fig.3.1
In the block diagram of the front-end (U1160) the following functions can be recognized.

The tuner part
The video IF circuit
The sound IF circuit

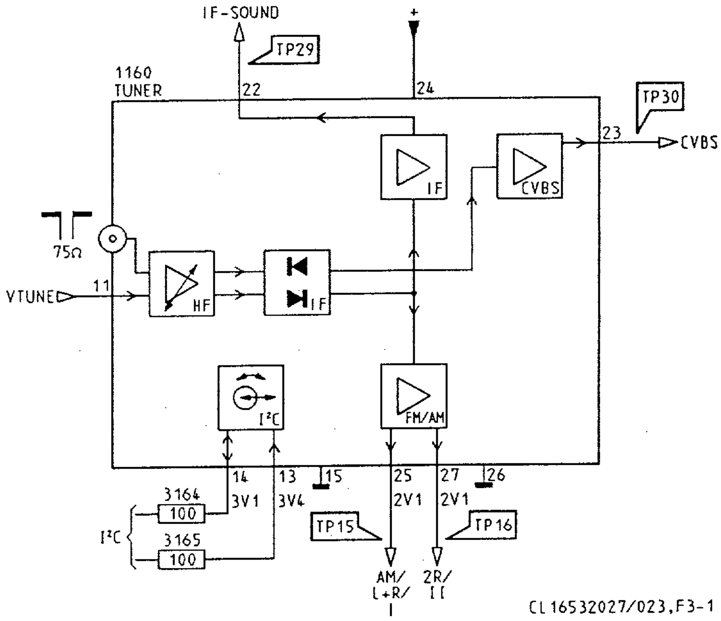
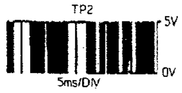


Fig. 3.1

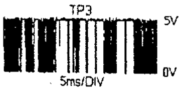
## 3.1 The tuner part

I²C data signals

SDA (TP2)



SCL (TP3)



Voltage on pin 11 of the front-end during searching.
0V-->33V

The tuner used in this front-end is almost identical to the UV816 (used in chassis D16, G110, G90B etc.). This tuner is able to receive the VHF1, VHF3, UHF, S- channels but also the Hyperband, divided, internally, over 3 bands ( low band, mid band and high band), see fig 3.2.

The desired band selection and tuning frequency from the control system are passed on to the channel selector via the I²C bus, pins 13 and 14. The channel selector includes a PLL (Phase Locked Loop) circuit which provides the tuning.

The tuning voltage is derived directly from the + 141V, main supply voltage. If one measures at pin 11 of the front-end a voltage between 0 and 33 V is present. This is dependent of the frequency. When searching is activated the voltage at pin 11 increases.

# 3.2 The IF circuitry

The IF signal (see fig 3.2) from the tuner part of the front-end enters first the audio demodulator and video demodulator.

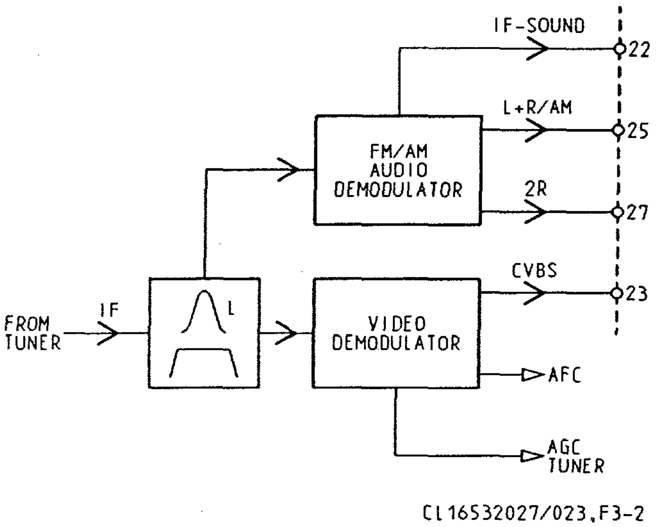

IF-SOUND
22
L+R/AM
25
FM/AM
AUDIO
DEMODULATOR
2R
27
CVBS
23
FROM
TUNER
IF
L
VIDEO
DEMODULATOR
AFC
AGC
TUNER
CL 16532027/023.F3-2

Fig. 3.2

In the audio demodulator first the IF spectrum is converted back to a frequency of 4.5, 5.5, 5.74 MHz etc, dependent of the received system. This signal is also available on pin 22 (TP 29) of the front-end where it will be used for demodulation in case of NICAM and SECAM D/K. The NICAM demodulation takes place on the NICAM module. SECAM D/K modulation takes place on te small signal panel.
AM sound demodulation, FM 4.5, 5.5 and 5.74 MHz demodulation takes also place in this audio demodulator The low frequent, still matrixed, AM / L+R signal (TP 15) leaves the front-end at pin 25 and the 2R signal (TP 16) leaves the front-end at pin 27.

In the video demodulator the IF video spectrum at 38.9 MHz is demodulated. The CVBS output is fed directly to the output pin 23, (TP30).

The information on pin 23 (CVBS out) is also used to mute the sound in case of no CVBS.
Video recognition takes place "normal" via the synchronisation IC, IC7400, see chapter 6.

# 4 The sound path

The following sound signals may be presented from the front end (chapter 3):

- LF AM demodulated sound (SECAM L/L')
- LF FM demodulated (matrixed) sound
- IF signal with 5.85MHz (PAL B/G) or 6.552MHz (PAL I) NICAM sound.

Stereo decoder TDA8417 and control amplifier TDA8425 have been inserted for sound processing. Two separate circuits have been added for source and record selection and a NICAM module has been added for the countries where digital sound (NICAM) is transmitted. These circuits as well as the headphone amplifier are situated on the small signal PC board.
The output amplifiers are housed on the large signal PC board.

## 4.1 Sound processing

(Figure 4.1) see page 4.13

**Stereo decoder**

The two FM demodulated LF signals 2R (TP16) and L+R (TP15), originating from the TUNER/IF combination (Front-end), are supplied to stereo decoder IC7600 (TDA8417).
The status (MONO, DUAL LANGUAGE or STEREO) is determined in the stereo decoder. Depending on the status, the control microcomputer sets the de-matrix circuit in the correct position via the $I^2C$ bus.
With dual language broadcasts the language selected is sent on to the source/record selector circuits and to euro-connector 1.

**AM sound**

With SECAM L/L' broadcasts the AM demodulated LF sound is fed to pin 9 of the stereo decoder (IC7600).
For SECAM L/L' this sound source is selected via the $I^2C$ bus.

**NICAM**

If a NICAM module is present, the IF signal with digital sound (TP29) coming from the front-end is fed to the NICAM module (U1600).
On the NICAM module the digital sound is bypassed and converted into an analog signal.
If no digital sound is present in the IF signal, this will be detected on the NICAM module and the system will switch over to analog (FM) sound. The analog sound comes from the stereo decoder.
In this case the sound signals to euroconnector 1 come via a buffer (IC7193) from the NICAM module outputs.

**Source/record selection**

The sound signals (TP19 and TP20) travel to the SOURCESELECT circuit (IC7620, HEF4052) and to the RECORDSELECT circuit (IC7622, HEF4052).
There a choice is made between the sound signal from the stereo decoder (or NICAM module) or from one of the EXTERNAL sound sources (EXT1, EXT2 or EXT3).

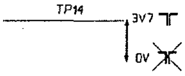
## Control amplifier

The sound source selected in IC7620 is fed via a buffer circuit (IC7630, LF353) to the AGC amplifier (IC7680, TDA8425).
In the AGC amplifier the BASS, TREBLE, VOLUME, BALANCE, SPATIAL *and* PSEUDO *functions and the* MONO/STEREO switch are controlled via the $I^2C$ bus.

The sound signals (TP8 and TP9) continue on their way to the sound output amplifiers, which are located on the large signal PC board.
A separate amplifier takes care of the sound for the headphones. This amplifier is located on the small signal PC board.

## Mute

From the CVBS signal originating from the front-end a mute voltage is made, which is supplied to pin 18 (mute input) of the stereo decoder (see Fig. 4.2.).



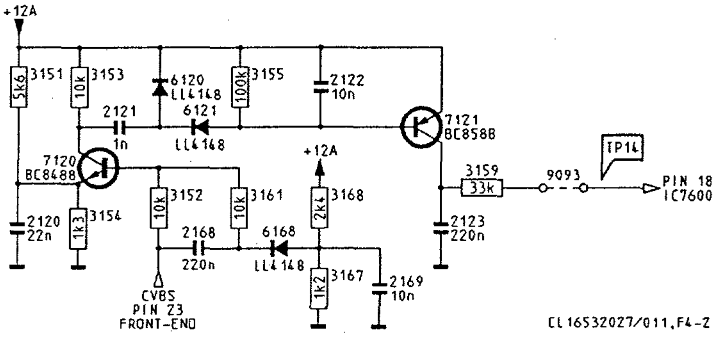
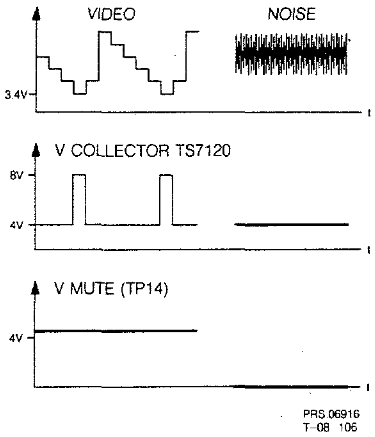

+12A
3151
5k6
3153
10k
6120
LL4148
3155
100k
2122
10n
2121
1n
6121
LL4148
7121
BC858B
7120
BC848B
+12A
TP14
3159
33k
9093
PIN 18
IC7600
2120
22n
1k3
3154
3152
10k
3161
10k
3168
2k4
2168
220n
6168
LL4148
2123
220n
3167
1k2
2169
10n
CVBS
PIN 23
FRONT-END
CL16532027/011.F4-2

Fig. 4.2

**If video present:**
The CVBS signal is supplied to the mute circuit. This circuit removes the sync pulses from the CVBS signal and rectifies them to a DC voltage of 5V (TP14).
Now sound is present at outputs 11 through 14 of the stereo decoder.

**No video present:**
If no video is present, no sync pulses are detected. The output voltage then is 0V (TP14) and the sound is muted at all outputs (11 through 14 of the stereo decoder).



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PIN 18
IC7600

/011,F4-Z

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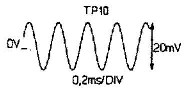
## Headphone amplifier



This amplifier consists of two parts: an amplifier (IC7704) and a current amplifier (TS7706, TS7708). (see Fig. 4.3)

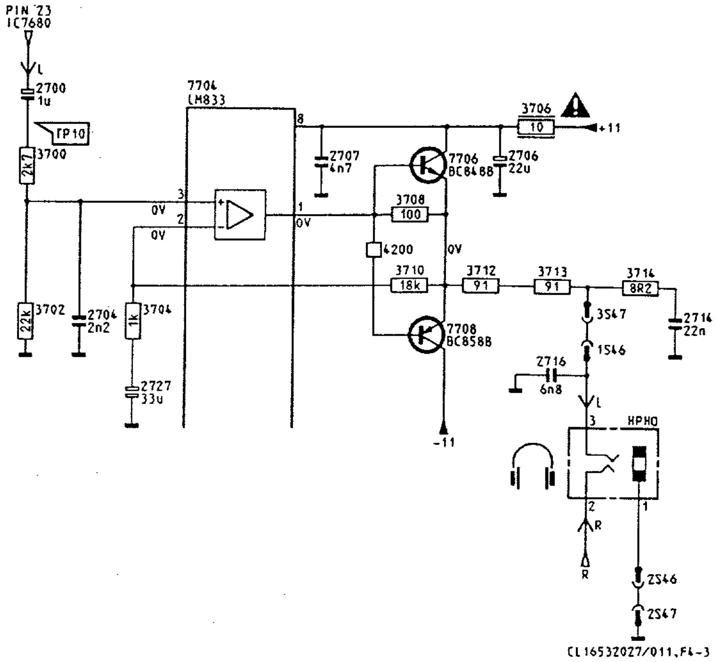

PIN 23
IC7680
L
2700
1u
TP10
3700
2k7
7704
LM833
8
3
2
1
0V
0V
0V
0V
2707
4n7
7706
BC848B
2706
22u
3706
10
+11
3708
100
4200
3710
18k
3712
91
3713
91
3714
8R2
2714
22n
3702
22k
2704
2n2
3704
1k
2727
33u
7708
BC858B
-11
3S47
1S46
2716
6n8
L
3
HPHO
2
1
R
R
2S46
2S47
CL 16532027/011.F4-3

Fig. 4.3

The voltage gain is determined by feedback circuit R3710, R3704 and C2727. The gain factor for the low frequencies is smaller because of the presence of C2727 in the feedback circuit. The amplified sound signal then goes via the emitter follower, built up of transistors TS7706 and TS7708, to the headphones.

With small signals the current flows via R3708, R3712 to the headphones to prevent distortion and oscillation.

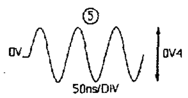
When the mute button on the remote control is pressed, the sound on the headphones is not affected.

## 4.2 The NICAM sound path

The NICAM IF signal is supplied to the NICAM input bandpass filter (1106) (see Fig. 4.4). This filter has a response frequency of 5.85 MHz for PAL BG or 6.552 MHz for PAL I. The NICAM phase-modulated sound signal remaining after filtering (PM sound) goes to pin 4 of the QPSK demodulator TA8662.

### The QPSK demodulator

This circuit (see fig. 4.4) converts the phase-modulated carrier wave into a serial bit stream which again complies with the NICAM format. The filtered phase-modulated signal is supplied to the AGC circuit. The output signal of the AGC circuit is supplied to the QPSK demodulator. The output signals of this demodulator are taken to the outside via pins 10 and 11. These signals are filtered by the low-pass filters L5124/C2124 and L5125/C2125. Via pins 20 and 19 the filtered data signals are supplied to the phase detector of the internal oscillator. The type of crystal in the reference circuit depends on the system and is 6.552 MHz for PAL I and 5.85 MHz for PAL BG.



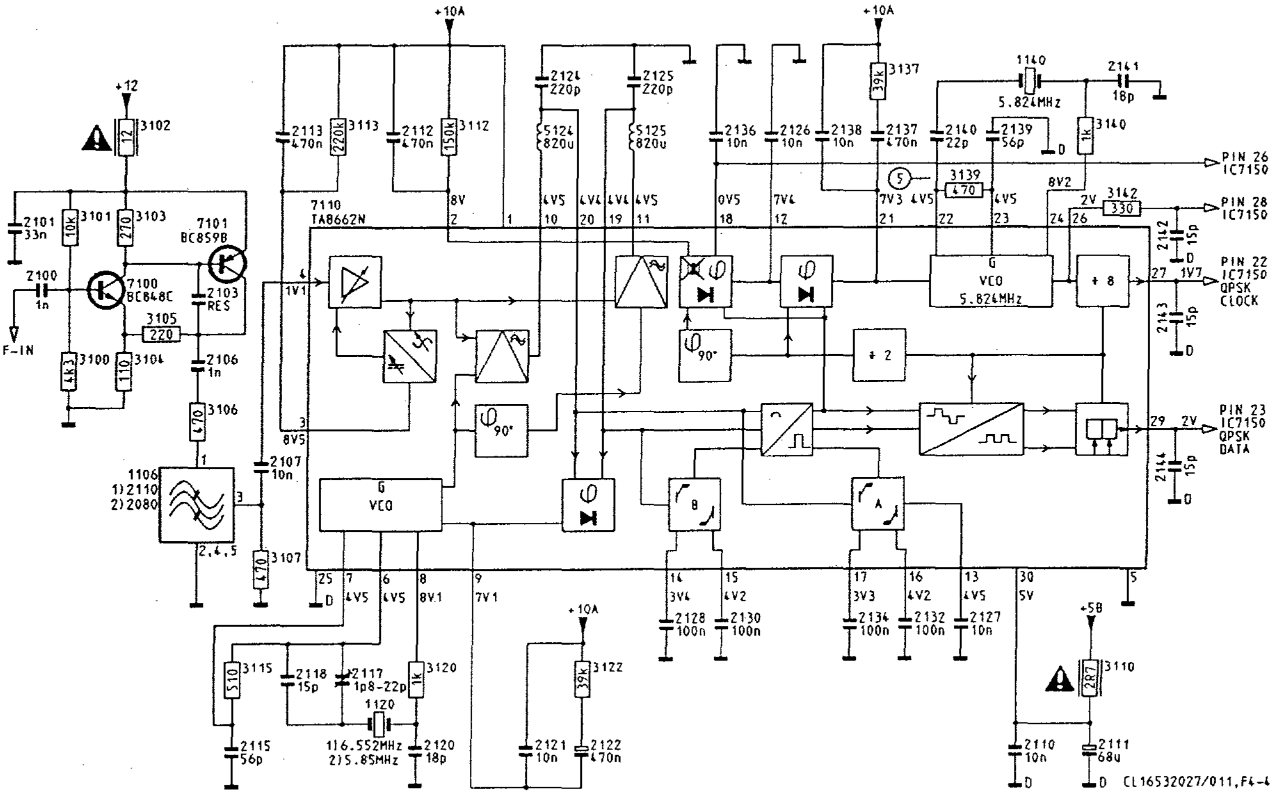

+12
3102
12
2101
33n
3101
10k
3103
270
7101
BC859B
2100
1n
7100
BC848C
2103
RES
3105
220
IF-IN
3100
4k3
3104
110
2106
1n
3106
470
1106
1) 2110
2) 2080
2,4,5
2107
10n
3107
470
+10A
2113
470n
3113
220k
2112
470n
3112
150k
7110
TA8662N
8V
8V5
1V1
2124
220p
2125
220p
5124
820u
5125
820u
4V5
4V4
4V4
4V5
90°
G
VCO
25
D
7
4V5
6
4V5
8
8V1
9
7V1
3115
510
2118
15p
2117
1p8-22p
3120
1k
1120
1) 6.552MHz
2) 5.85MHz
2115
56p
2120
18p
+10A
3122
39k
2121
10n
2122
470n
2136
10n
2126
10n
2138
10n
3137
39k
2137
470n
1140
5.824MHz
2141
18p
2140
22p
2139
56p
D
3140
1k
PIN 26
IC7150
⑤
3139
470
0V5
18
7V4
12
7V3
21
4V5
22
4V5
23
8V2
24
2V
26
3142
330
PIN 28
IC7150
2142
15p
D
G
VCO
5.824MHz
÷ 8
÷ 2
27
1V7
PIN 22
IC7150
QPSK
CLOCK
2143
15p
D
29
2V
PIN 23
IC7150
QPSK
DATA
2144
15p
D
B
A
14
3V4
15
4V2
2128
100n
2130
100n
17
3V3
16
4V2
13
4V5
2134
100n
2132
100n
2127
10n
30
5V
5
+5B
3110
2R7
2110
10n
2111
68u
D
D
CL16532027/011,F4-4

Fig. 4.4

The filtered data signals then continue to the differential encoder circuit. Via a 2-bit parallel/serial converter the NICAM coded signal at pin 29 is taken to the outside. Pin 18 is the output for the NICAM mute signal.The 5.824 MHz clock signal is available at pin 24 and the 728 kHz clock signal at pin 27.

bandpass
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plies
d signal
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tput
via pins
s filters
9 the
or of the
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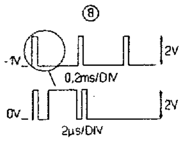
and

PIN 26 IC7150
PIN 28 IC7150
PIN 22 IC7150 QPSK CLOCK
PIN 23 IC7150 QPSK DATA
/011.F4-4

tial
e NICAM
3 is the
lock
gnal at

## The NICAM decoder (CF70123)

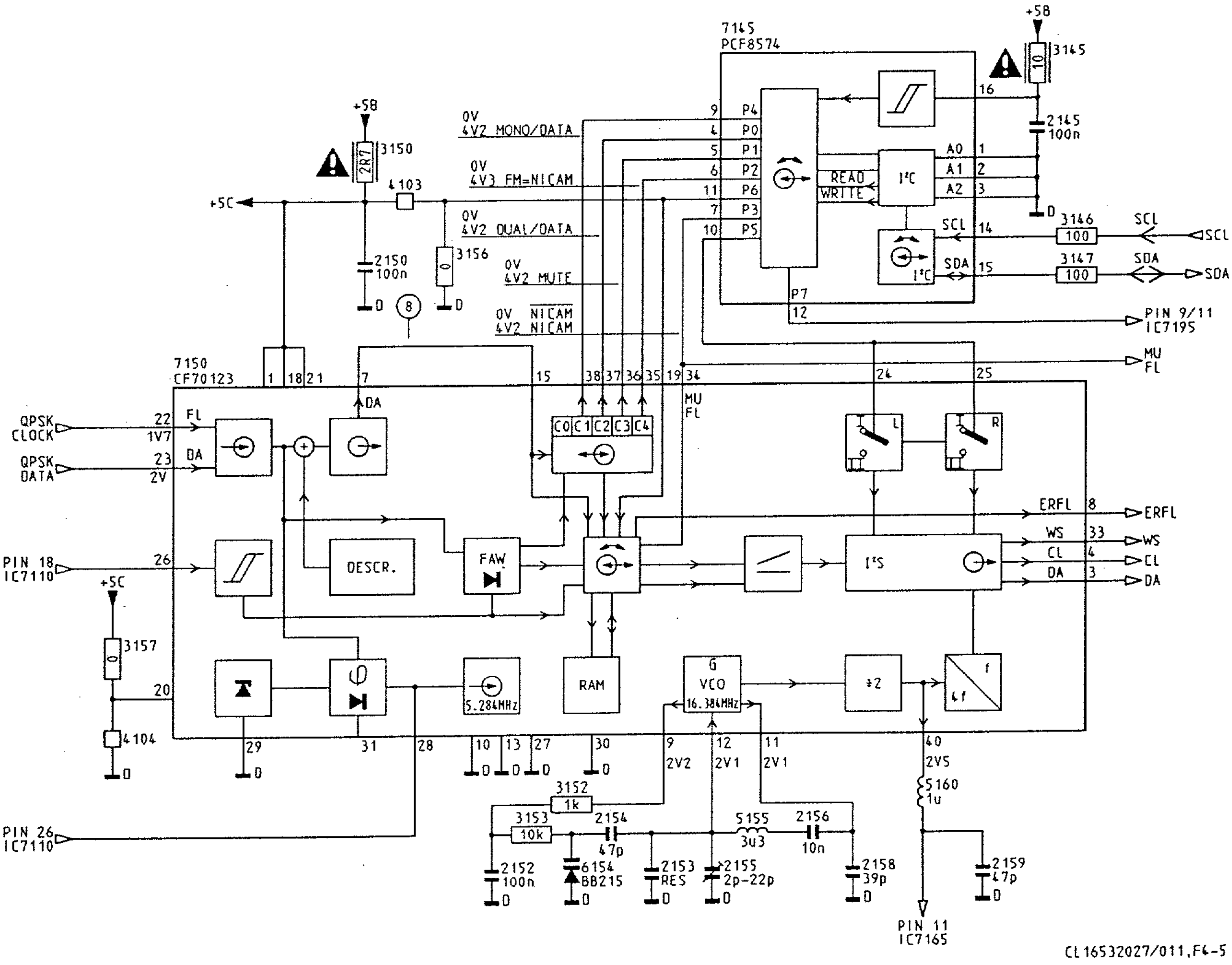
Service tip
Using the colour pattern generator PM5515TN, PM5518TN or PM5518TNI, the QPSK demodulator and the NICAM decoder can be tested.
When test signal DATA1 is used, a pulse train can be measured at pin 29 of the QPSK demodulator. In this situation the NICAM decoder will also give a pulse train at pin 8 (ERFL). The DATA2 test signal is used to test the NICAM decoder. In this situation a 32 kHz pulse train can be measured at the I²S bus.
The DATA3 test signal gives an unmodulated NICAM sound carrier wave which is used for settings.



8
-1V
2V
0.2ms/DIV
0V
2V
2µs/DIV

The NICAM decoder ensures that the serial digital information, coded according to the NICAM system, is converted again into 14-bit words which can be processed directly by a D/A converter (see fig. 4.5).

The data signal comes in at pin 23 and is read in using the clock signal at pin 22. (The data signal of the QPSK demodulator is locked to the clock signal). The read-in signal is first descrambled. The descrambled data are taken to the outside via pin 7. The data signal at pin 7 is read in again directly at pin 15. The NICAM decoded signal is then converted into a signal according to the I²S format. This signal comes via pins 3, 4 and 33 from the NICAM decoder IC and goes via a digital filter, IC7165 (SAA7220), to the DAC IC7170 (TDA 1543). The NICAM control bits are present at pins 35 to 38. These control bits indicate what kind of signal is present (MONO/STEREO/2 LANGUAGES). These control bits are sent to the microprocessor via the I/C Expander (IC7145) and the I²C bus.



7145
PCF8574
+5B
3145
10
16
2145
100n
P4
P0
P1
P2
P6
P3
P5
P7
12
READ
WRITE
I²C
A0
A1
A2
SCL
SDA
3146
100
3147
100
SCL
SDA
0V 4V2 MONO/DATA
0V 4V3 FM=NICAM
0V 4V2 DUAL/DATA
0V 4V2 MUTE
0V NICAM 4V2 NICAM
+5B
3150
2R7
4103
+5C
2150
100n
3156
8
PIN 9/11 IC7195
MU FL
7150
CF70123
QPSK CLOCK
QPSK DATA
1V7
2V
FL
DA
DESCR.
FAW
C0 C1 C2 C3 C4
MU FL
24
25
L
R
ERFL
WS
CL
DA
I²S
PIN 18 IC7110
+5C
3157
4104
RAM
G VCO 16.384MHz
5.284MHz
÷2
2V2
2V1
2V1
2V5
3152 1k
3153 10k
2154 47p
5155 3u3
2156 10n
2152 100n
6154 BB215
2153 RES
2155 2p-22p
2158 39p
5160 1u
2159 47p
PIN 26 IC7110
PIN 11 IC7165
CL 16532027/011.F4-5

Fig. 4.5

## The digital filter (SAA7220)

The I²S signal comes in at pins 1, 2 and 3 (see Fig. 4.6). This is divided into a left and right signal.

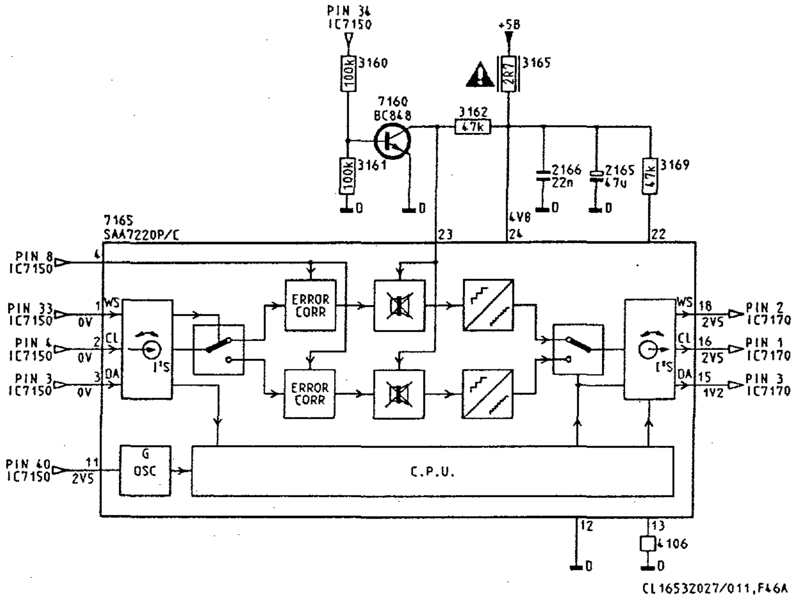

PIN 34
IC7150
+5B
3160
100k
3165
2R7
7160
BC848
3162
47k
3161
100k
2166
22n
2165
47u
3169
47k
7165
SAA7220P/C
23
4V8
24
22
PIN 8
IC7150
4
PIN 33
IC7150
0V
1
WS
PIN 4
IC7150
0V
2
CL
PIN 3
IC7150
0V
3
DA
I²S
ERROR
CORR
ERROR
CORR
WS
18
2V5
PIN 2
IC7170
CL
16
2V5
PIN 1
IC7170
DA
15
1V2
PIN 3
IC7170
I²S
PIN 40
IC7150
11
2V5
G
OSC
C.P.U.
12
13
4106
CL 16532027/011.F46A

Fig. 4.6

If the Error flag (pin 4) indicates that a faulty sample is coming in, this is replaced by another sample which is between the previous and the next good sample. The signal can then be suppressed by a low level at pin 23 (mute). This is done by pin 34 of IC7150 which then makes transistor TS7160 conduct. The digital filter then converts the 32 kHz samples into 128 kHz samples. The advantage of this is that the analogue filter may have a lower order, which means that the frequency response is not affected as much. The output signal is converted into a signal according to the I²S format and is taken to the A/D converter via pins 15, 16 and 18.

## The D/A converter (TDA1543)

IC7170 (see fig. 4.7) contains an I²S interface and two D/A converters.

The I²S interface takes the data from the left and right channel from the I²S signal and sends them to their respective D/A converters. These convert the samples supplied into an equivalent current at output pins 6 (left) and 8 (right). With this current a reference current is also added internally which also goes to the outside via pin 7. This reference current raises the zero level of the output signals, which improves the dynamic range. With the signal from pin 7 this current can be compensated again in the analogue filters.

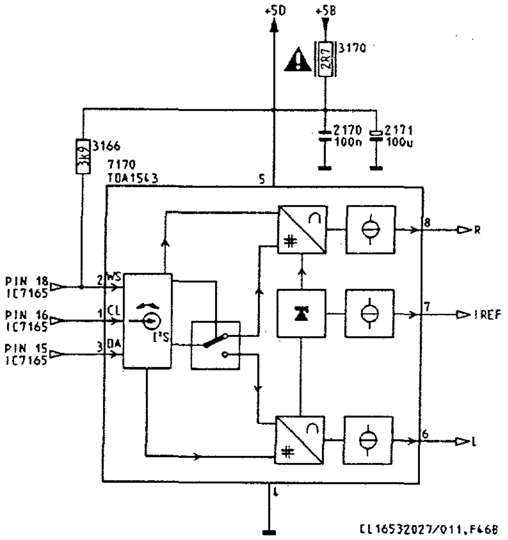

+5D
+5B
3170
2R7
2170
100n
2171
100u
3166
3K3
7170
TDA1543
5
8
R
7
IREF
6
L
PIN 18
IC7165
2
WS
PIN 16
IC7165
1
CL
PIN 15
IC7165
3
DA
I²S
4
CL 16532027/011.F46B

Fig. 4.7

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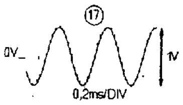
## The analogue filters



The output signals at pins 6 and 8 of the DAC (see fig. 4.8) are sent to two selective amplifier circuits.

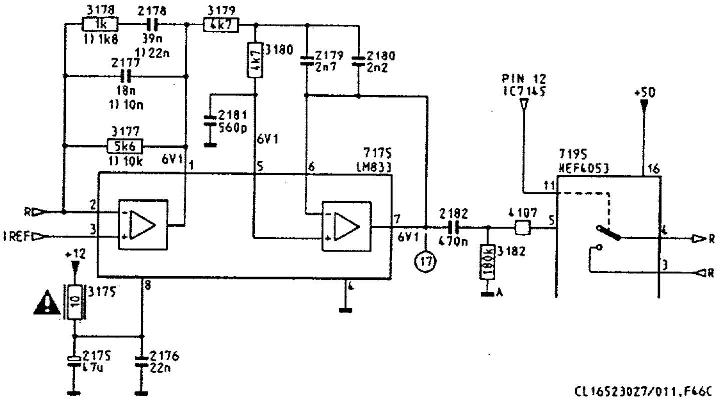
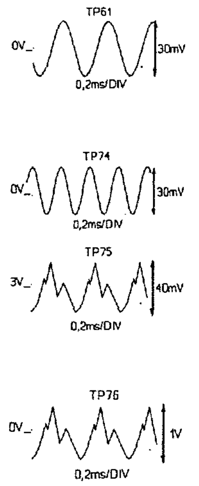

3178
1k
1) 1k8
2178
39n
1) 22n
3179
4k7
2177
18n
1) 10n
3177
5k6
1) 10k
6V1
1
3180
4k7
2181
560p
6V1
2179
2n7
2180
2n2
5
6
7175
LM833
R
IREF
2
3
+12
3175
10
8
4
2175
47u
2176
22n
7
6V1
⑰
2182
470n
180k
3182
A
4107
PIN 12
IC7145
+5D
7195
HEF4053
16
11
5
4
3
R
R
CL16523027/011.F46C

Fig. 4.8

A selective amplifier circuit consists of an operational amplifier (IC7175 or IC7185) and several passive components. The current at pin 2 (-input) is converted into an output voltage. The value of this current is however offset with regard to the actual value because a current is added to it in the D/A converter. By supplying a direct current (from pin 7 of IC7170) at the + input (pin 3) of the operational amplifier, the offset is lifted. The L.F. sound signal is now available at pins 7 of IC7175 (right) and IC7185 (left), and from there goes to the FM sound/NICAM sound selection circuit in IC7195.

# 4.3 Sound output amplifiers



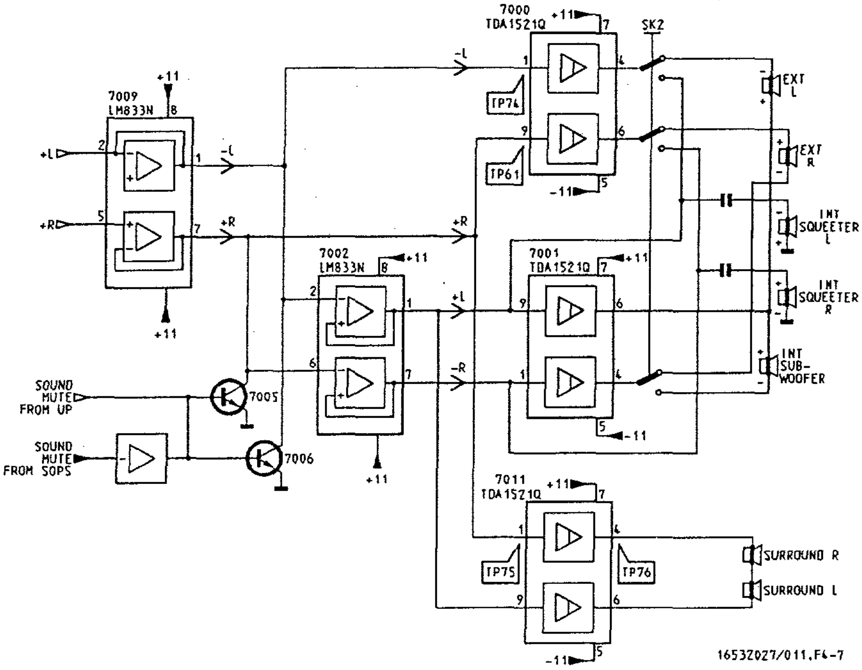

7000
TDA1521Q
+11
7
SK2
-L
TP74
TP61
-11
5
EXT L
EXT R
INT SQUEETER L
INT SQUEETER R
INT SUB-WOOFER
7009
LM833N
+11
8
+L
+R
-L
+R
+11
7002
LM833N
+11
+L
-R
7001
TDA1521Q
+11
-11
SOUND MUTE FROM UP
7005
SOUND MUTE FROM SOPS
7006
+11
7011
TDA1521Q
+11
TP75
TP76
SURROUND R
SURROUND L
-11
16532027/011.F4-7

Fig. 4.9

The sound signals coming from the AGC amplifier (IC7680) are sent to a preamplifier (IC7009), where the L-signal is inverted. The R-signal is not inverted. Consequently, there is -L and +R at the output of IC7009.
These signals are supplied to the output amplifier IC7000 and a second preamplifier IC7002. IC7002 inverts both signals, so that L and -R are present at the outputs of these amplifiers. These signals are supplied to the output amplifier IC7001.
With SK2 it is possible to select between external squeeters (mid range and treble) and external full range loudspeakers. If the squeeters are selected, one SUBWOOFER (central bass system) is connected in the unit between -R and L of IC7001. This subwoofer reproduces signals up to approximately 500 Hz.

The squeeters are connected via capacitors between the -L output and earth and +R output and earth of the output amplifier IC7000.
If external loudspeakers are selected, then external FULL RANGE (low, mid and high) loudspeakers must be connected. The left loudspeaker is connected between the -L output of IC7000 and the +L output of IC7001. The right loudspeaker is connected between the +R output of IC7000 and the -R output of IC7001.

The +R output signal of IC7009 and the +L output signal of IC7002 are sent to the surround sound output amplifier IC7011. The surround sound loudspeakers are connected between the +L output and the +R output of IC7011. With stereo transmission the surround sound loudspeakers thus indicate the difference between L and R. With mono transmission (L and R equal) the surround sound loudspeakers produce no signal.

The ma

## The main output amplifier

IC7009 contains two opamps. The L signal from the control amplifier (IC7680) is controlled at the -input of one opamp. The R signal is controlled at the +input of the other opamp. In order to prevent oscillations the amplification of both opamps is doubled. The amplification is determined by R3050, R3051 and R3052, R3053 (see Fig. 4.10). Thus -2L and +2R come out of the preamplifier (IC7009). The output amplifiers in IC7000 have an input impedance of approximately 10k. The -2L and +R signals are reduced agair to -L and +R by the series resistors R3000 and R3001 and taking into account the input impedance of the output amplifiers. These signals are also connected with the output amplifier IC7000 and a second preamplifier IC7002 (see Fig. 4.11). IC7002 also has 2 opamps, whose amplification is determined by R3006, R3005 and R3009 and R3004.

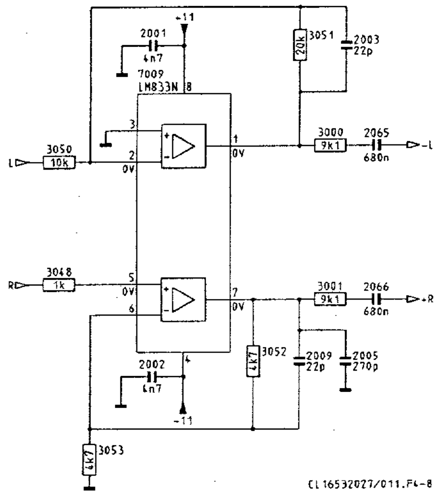

-11
2001
4n7
7009
LM833N
8
3051
20k
2003
22p
3050
10k
L
3000
9k1
2065
680n
-L
3048
1k
R
3001
9k1
2066
680n
+R
3052
4k7
2009
22p
2005
270p
2002
4n7
-11
3053
4k7
CL 16532027/011.F4-8

Fig. 4.10

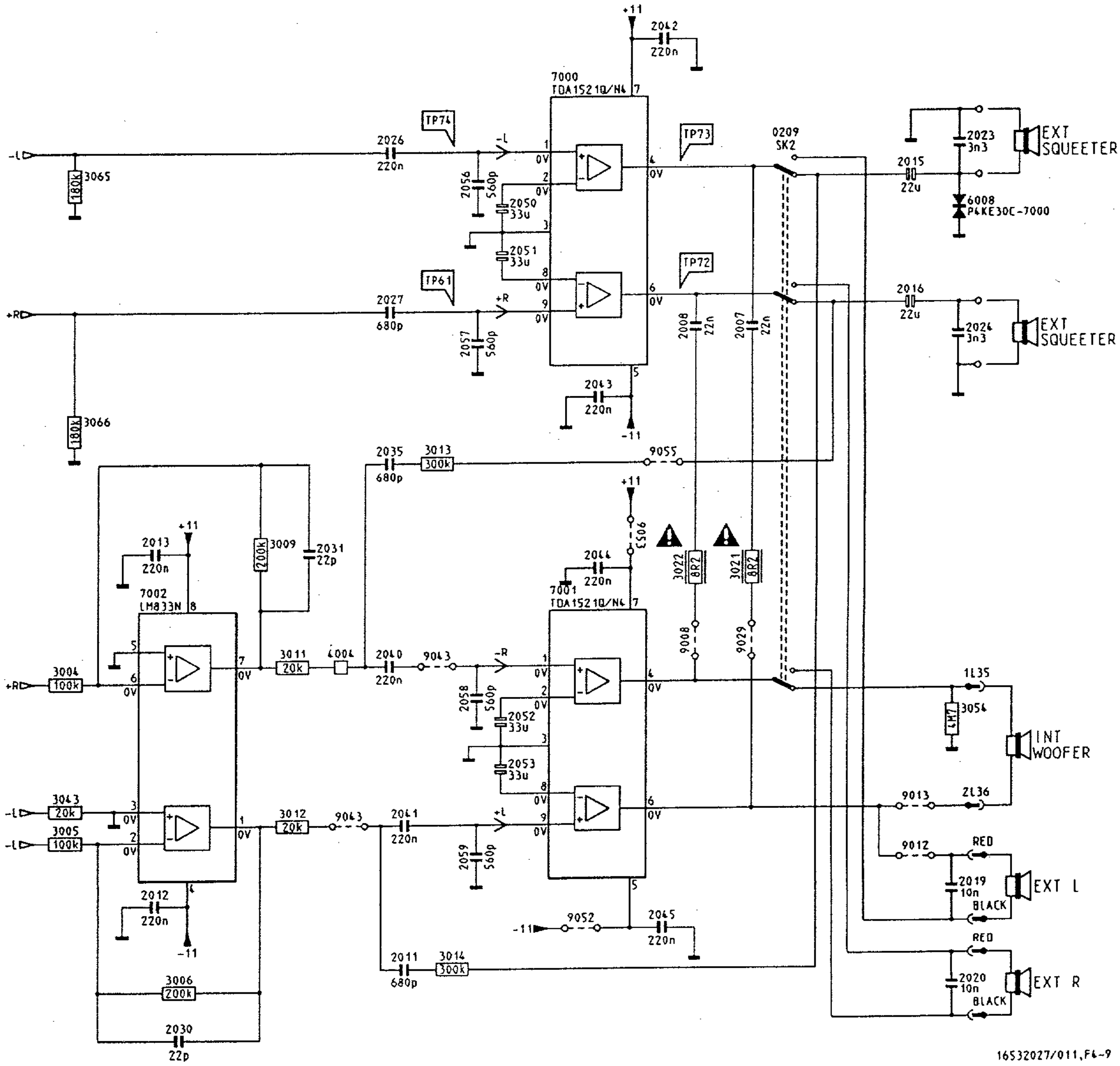
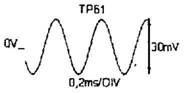
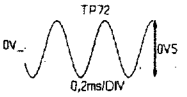
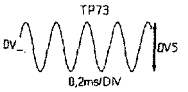
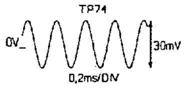

+11
2042
220n
7000
TDA1521Q/N4
TP74
TP73
TP61
TP72
-L
2026
220n
3065
180k
+R
2027
680p
3066
180k
2056
560p
2050
33u
2051
33u
2057
560p
2008
22n
2007
22n
2043
220n
-11
0209
SK2
2023
3n3
EXT SQUEETER
2015
22u
6008
P4KE30C-7000
2016
22u
2024
3n3
EXT SQUEETER
2035
680p
3013
300k
9055
+11
9053
2044
220n
3022
8R2
3021
8R2
7001
TDA1521Q/N4
9008
9029
2013
220n
7002
LM833N
3009
200k
2031
22p
3004
100k
3011
20k
4004
2040
220n
9043
-R
2058
560p
2052
33u
2053
33u
+L
1L35
3054
4k7
INT WOOFER
9013
2L36
9012
RED
2019
10n
BLACK
EXT L
RED
2020
10n
BLACK
EXT R
3043
20k
3005
100k
3012
20k
9043
2041
220n
2059
560p
2012
220n
-11
9052
2045
220n
2011
680p
3014
300k
3006
200k
2030
22p
16532027/011.F4-9

Fig. 4.11









The amplification is also multiplied by 2. Both opamps are controlled at the -input. There is thus a +2L and -2R signal from IC7002. Via R3012, C2041 and R3011, C2040 the +2L and -2R signals are also reduced once more to +L and -R signals (input impedances of IC7001), which are sent to the output amplifiers in IC7001.

The AC amplification of IC7000 and IC7001 is determined internally and is 34x.
The outputs of the output amplifier IC7001, pin 4 for -R and pin 6 for +L, are connected via SK2 (in the bottom position) to the internal subwoofer (see Fig. 4.7).

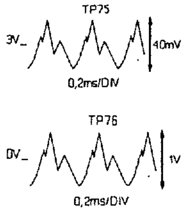
Via SK2 and R3014, C2011 and R3013, C2035, the outputs of IC7000 are fedback to the inputs of IC7001.
Consequently, a frequency-dependent feedback is obtained.
C2011, R3014 and C2035, R3013 allow single signals through from 500 Hz. Thus single signals up to 500 Hz remain at the input of IC7001, which means that the subwoofer only reproduces the low frequencies up to 500 Hz.

The squeeters are connected via capacitors between +R (pin 6, IC7000) and earth and -L (pin 4, IC7000) and earth. The L squeeter is connected in the opposite direction so that the +L signal is still reproduced (otherwise the squeeters would be connected in opposite phase). The frequency of the squeeters ranges from approximately 500 Hz to 15 kHz.
The squeeters also produce the stereo effect, because stereo is primarily audible in this frequency range.

If the external loudspeakers are switched on (SK2 in the top position), they are connected between IC7000 and IC7001 (Fig. 4.8).

This means that the left loudspeaker is connected between -L and +L and the right loudspeaker between +R and -R. In this way the capacity with regard to the squeeters is doubled.

## The surround sound amplifier



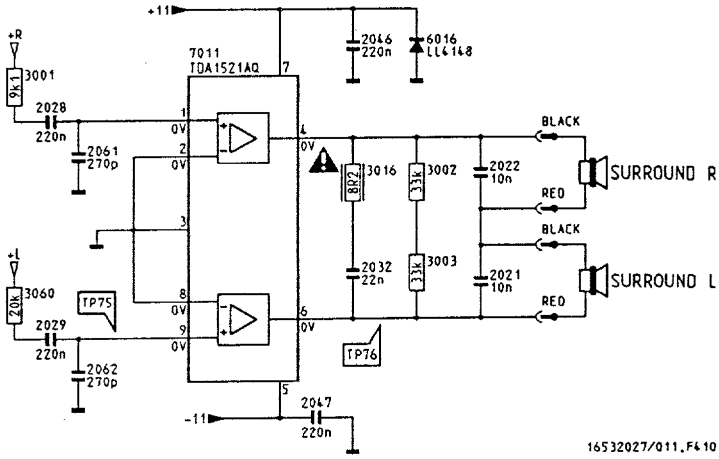

+11
+R
3001
9k1
2028
220n
2061
270p
7011
TDA1521AQ
1
OV
2
OV
3
7
4
OV
2046
220n
6016
LL4148
3016
8R2
3002
33k
2022
10n
BLACK
RED
SURROUND R
BLACK
RED
SURROUND L
2032
22n
3003
33k
2021
10n
+L
3060
20k
TP75
2029
220n
8
OV
9
OV
2062
270p
6
OV
TP76
5
-11
2047
220n
16532027/011.F410

Fig. 4.12

The +L signal from the preamplifier IC7002 is supplied to th surround sound output amplifier IC7011 via R3060 and C2029 (see Fig. 4.12).
The +R signal from the preamplifier IC7009 is supplied to th surround sound output amplifier IC7011 via R3001 and C2028.
The amplification of IC7011 is determined internally and is also 34x. The surround sound loudspeakers are connected in series between pin 4 (+R) of IC7011 and pin 6 (+L) of IC7011. In this way the surround sound loudspeakers indicat the difference between L and R.

## Sound suppression

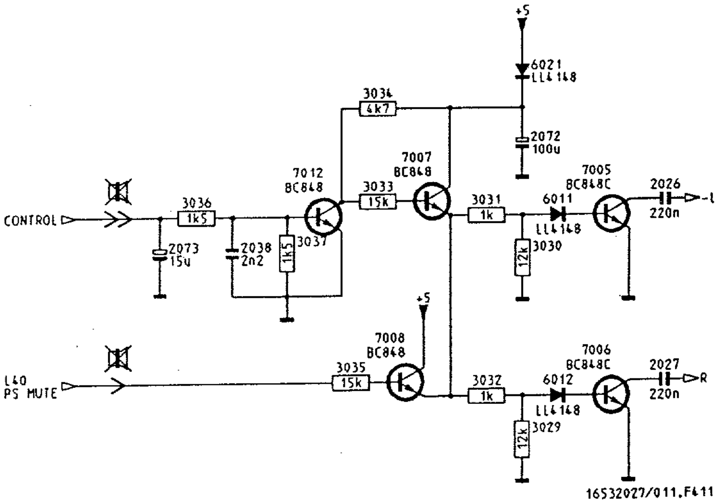

+5
6021
LL4148
3034
4k7
2072
100u
7007
BC848
7012
BC848
3033
15k
3031
1k
7005
BC848C
6011
LL4148
2026
220n
-L
CONTROL
3036
1k5
2073
15u
2038
2n2
3037
1k5
3030
12k
+5
7008
BC848
3035
15k
L40
PS MUTE
3032
1k
6012
LL4148
7006
BC848C
2027
220n
R
3029
12k
16532027/011.F411

Fig. 4.13

The sound will be suppressed during switching on and off an also when the MUTE button on the remote control is operate (see Fig. 4.13).

## Mute button

If the MUTE function is pressed on the remote control, the microcomputer of the operation will make the base of TS7008 high. This causes TS7005 and TS7006 to conduct and the sound is switched off.

### vitching the unit off

If TS7006 and TS7005 conduct, the signal at the output of IC7009 is short circuited. The base of TS7012 is high with the SOPS power supply and low if the SOPS power supply is switched off.
If the base of TS7012 is high, then TS7012 conducts. TS7007 is thus blocked, as are TS7005 and TS7006.
If the base of TS7012 is low (SOPS supply switched off), TS7007, TS7006 and TS7005 conduct. This switches off the sound.

### vitching the unit on

When starting up the microcomputer of the operation will make the base of TS7008 high approximately 250 ms high. This causes TS7005 and TS7006 to conduct and the sound is suppressed. As long as the SOPS power supply has still not started up completely, after these 250 ms the sound will remain switched off by TS7012.

### protection

An asymmetric deviation of the +11V and the -11V supply voltage produces a positive or negative potential at point A (see Fig. 4.14).

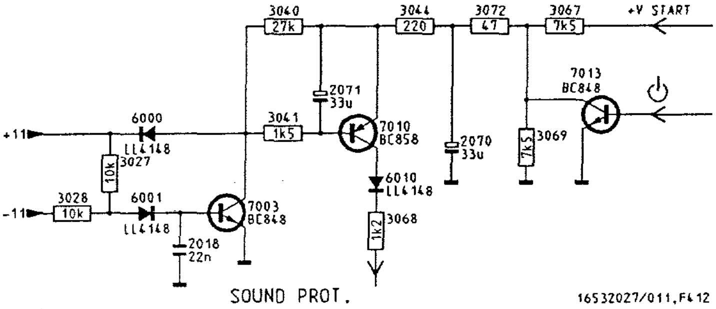
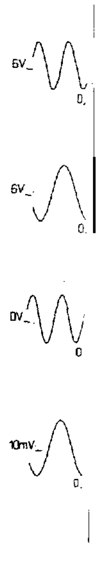

3040
27k
3044
220
3072
47
3067
7k5
+V START
7013
BC848
2071
33u
6000
3041
1k5
7010
BC858
2070
33u
3069
7k5
+11
LL4148
3027
10k
6010
LL4148
3028
10k
6001
7003
BC848
3068
1k2
-11
LL4148
2018
22n
SOUND PROT.
16532027/011,F412

Fig. 4.14

If the voltage at point A is greater than 0.6V (D6001) + 0.6V (be-TS7003) = 1.2V, TS7003 will start to conduct and thus also TS7010, which means that the SOPS supply will be switched to protection (see § 7.1).
If the voltage at point A is less than -1.2V, TS7004 and TS7010 will conduct.
If the +11V and the -11V are short circuited with one another, D6000 conducts, with the result that TS7010 starts to conduct and the supply is switched to protection.

The supply voltage of the protection circuit comes from +V start, which comes from the $\mu$-SOPS. This means that the supply voltage (+V start) is still present during standby mode. In order to switch the protection circuit off during standby, transistor TS7013 is added. TS7013 is made to conduct during standby via TS7385 by the microcomputer of the operation. TS7013 now short circuits to earth and the protection circuit is switched off.

Fig. 4



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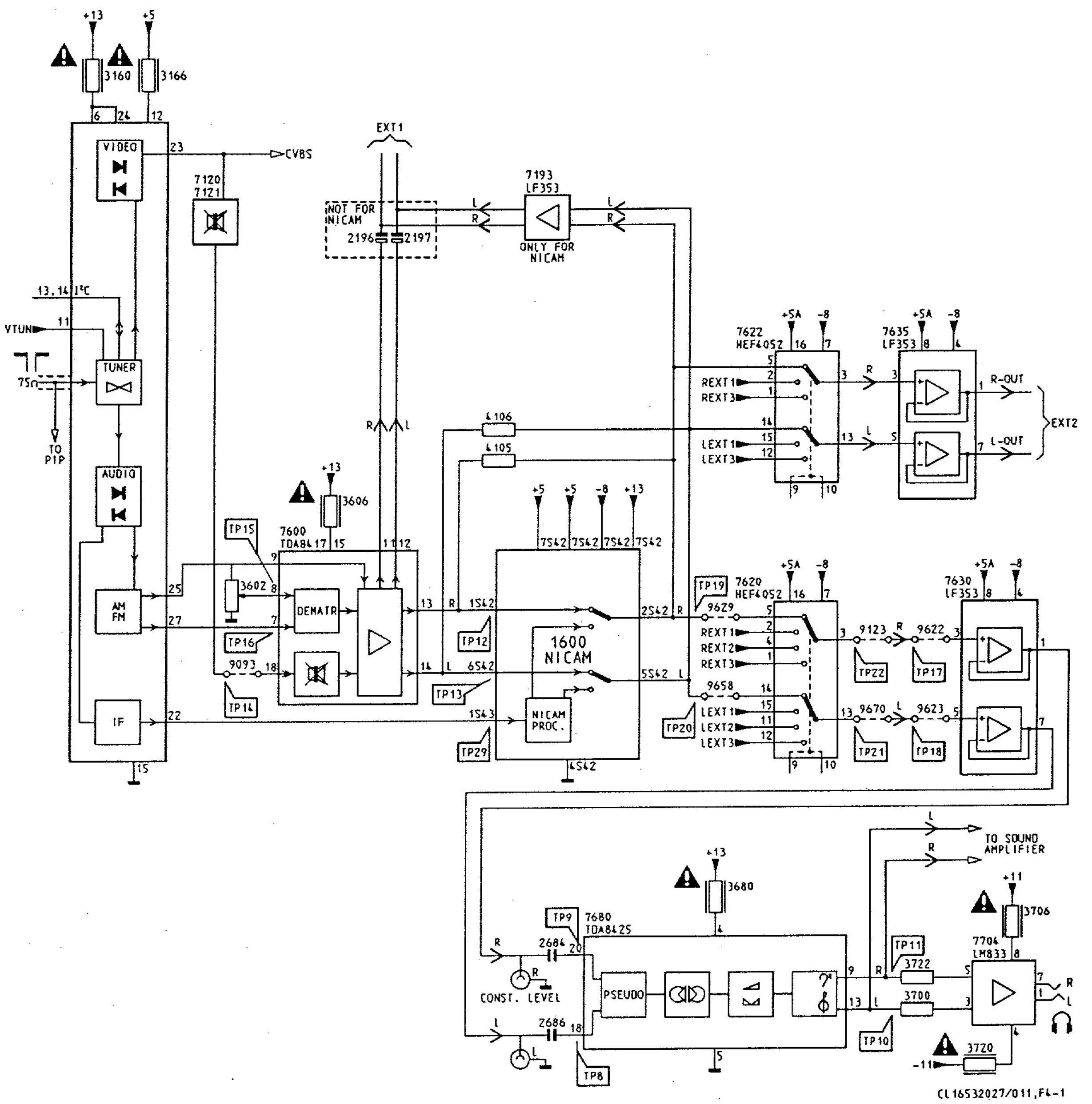
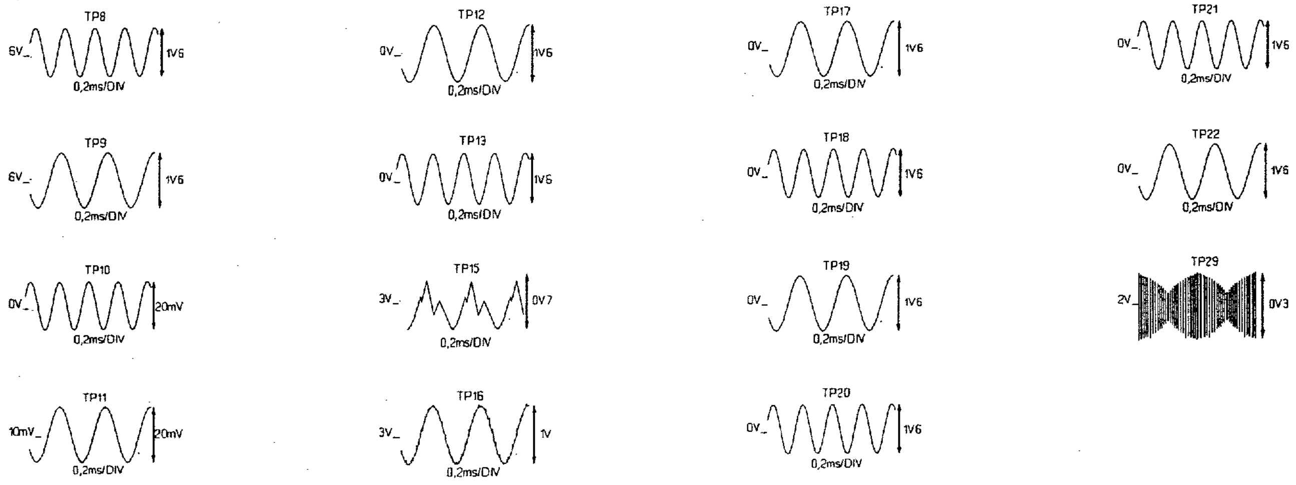

+13
+5
3160
3166
6
24
12
VIDEO
23
CVBS
7120
7121
EXT1
NOT FOR NICAM
2196
2197
7193
LF353
ONLY FOR NICAM
L
R
13,14 I²C
VTUN
11
TUNER
75Ω
TO PIP
AUDIO
AM FM
25
27
IF
22
15
R
L
+13
3606
TP15
7600
TDA8417
15
11
12
9
3602
8
DEMATR
7
TP16
9093
18
TP14
13
14
4106
4105
+5
+5
-8
+13
7S42
1S42
6S42
1S43
TP12
TP13
TP29
1600
NICAM
NICAM PROC.
2S42
5S42
4S42
+5A
-8
7622
HEF4052
16
7
REXT1
REXT3
LEXT1
LEXT3
5
2
1
14
15
12
3
13
9
10
7635
LF353
8
4
R-OUT
L-OUT
EXT2
TP19
7620
HEF4052
9629
REXT2
LEXT2
9658
TP20
9123
9622
9670
9623
TP22
TP17
TP21
TP18
7630
LF353
TO SOUND AMPLIFIER
+13
3680
TP9
7680
TDA8425
2684
20
2686
18
CONST. LEVEL
TP8
PSEUDO
TP11
TP10
+11
3706
7706
LM833
3722
3700
3720
-11
CL16532027/011,F4-1

Fig. 4.1



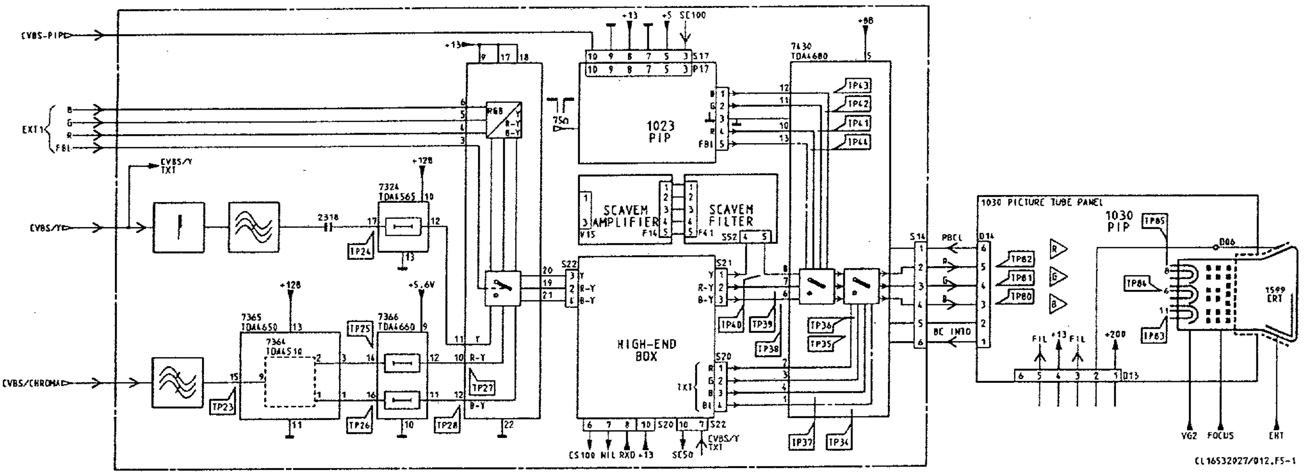
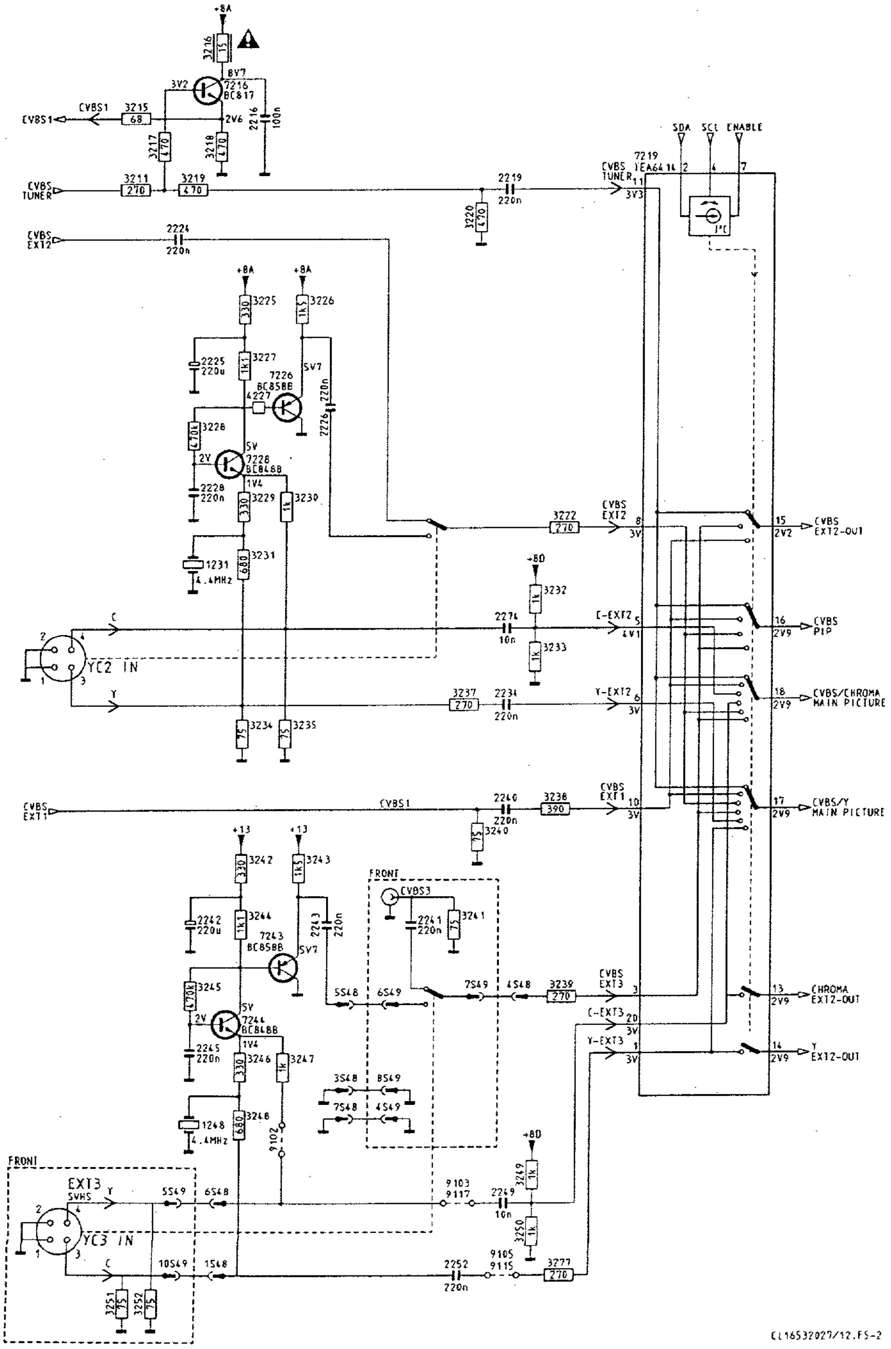

CVBS-PIP
EXT1
B
G
R
FBL
CVBS/Y TXT
CVBS/Y
2318
7324 TDA4565
TP24
+12B
+13
RGB
R-Y
B-Y
75Ω
1023 PIP
SCAVEM AMPLIFIER
SCAVEM FILTER
HIGH-END BOX
TXT
CS100 NIL RXD +13
SC50
CVBS/Y TXT
7365 TDA4650
7364 TDA4510
7366 TDA4660
+5.6V
TP25
TP23
TP26
TP27
TP28
CVBS/CHROMA
7430 TDA4680
+8B
TP43
TP42
TP41
TP44
TP40
TP39
TP38
TP36
TP35
TP37
TP34
1030 PICTURE TUBE PANEL
1030 PIP
PBCL
BC INFO
TP82
TP81
TP80
TP85
TP84
TP83
FIL
+13
+200
D86
1599 CRT
VG2
FOCUS
EHT
CL 16532027/012.F5-1

Fig. 5.1


+8A
3216
8V7
7216 BC817
3V2
CVBS1
3215 68
2V6
2216 100n
3217 470
3218 470
CVBS TUNER
3211 270
3219 470
2219 220n
3220 470
CVBS EXT2
2224 220n
SDA
SCL
ENABLE
7219 TEA6414
CVBS TUNER
3V3
I²C
3225 330
3226 1k5
2225 220u
3227 1k1
7226 BC858B
5V7
2226 220n
4227
3228 470k
7228 BC848B
2228 220n
3229 330
3230 1k
3231 680
1231 4.4MHz
3222 270
CVBS EXT2
+8D
3232 1k
2274 10n
C-EXT2
4V1
3233 1k
YC2 IN
C
Y
3237 270
2234 220n
Y-EXT2
3234 75
3235 75
CVBS EXT2-OUT
2V2
CVBS PIP
2V9
CVBS/CHROMA MAIN PICTURE
CVBS EXT1
CVBS1
2240 220n
3238 390
3240 75
CVBS/Y MAIN PICTURE
+13
3242 330
3243 1k5
FRONT
CVBS3
2241 220n
3241 75
2242 220u
3244 1k1
7243 BC858B
2243 220n
3245 470k
7244 BC848B
2245 220n
3246 330
3247 1k
3248 680
1248 4.4MHz
5S48
6S49
7S49
4S48
3239 270
CVBS EXT3
C-EXT3
Y-EXT3
CHROMA EXT2-OUT
Y EXT2-OUT
3S48
8S49
7S48
4S49
9102
EXT3 SVHS
YC3 IN
5S49
6S48
9103
9117
2249 10n
3249 1k
3250 1k
10S49
1S48
2252 220n
9105
9115
3277 270
3251 75
3252 75
CL 16532027/12.F5-2

Content

5.1 Sou
5.2 The
5.3 The
5.4 The
5.5 The
5.6 SCA
5.7 Vide
5.8 RGE

Block

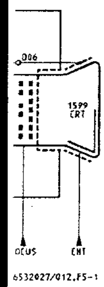
IC7364
= I
IC7365
= I

CTI = c
impr

# CHAPTER 5 THE VIDEO PATH

Contents

5.1 Source selection
5.2 The luminence path
5.3 The chroma path
5.4 The RGB matrix
5.5 The high end box
5.6 SCAVEM
5.7 Video controller
5.8 RGB amplifiers



## Block diagram

IC7364 = TDA4510
= PAL
IC7365 = TDA4650
= PAL/SECAM/NTSC

CTI = colour transient improvement

The CVBS/CHROMA signal coming from the video source selector is fed via an input filter to IC7364 (or IC7365), se fig 5.1.
The demodulator in the TDA4510/TDA4650 demodulates t signals and has the -(R-Y) and -(B-Y) signals as output. The colour difference signals are sent to IC7366 (TDA4660), th baseband delay line.
The -(R-Y) and -(B-Y) output signals from the delay lines ar fed to IC7324 (TDA4565), the CTI-IC.The CVBS/Y signal coming from the video source selector is fed via a sharpnes circuit and a switchable chroma trap to a programmable del line incorporated in the CTI-IC.
The delayed Y signal and colour difference signals are finall fed to IC7430 (TDA4680), the video control IC, which converts the colour difference signals into RGB signals. The video control IC has also separate RGB inputs for RGB from EXT 1 or PIP and for TXT signals. Brightness, contrast and colour saturation control as well as cut-off stabilization also take place in the video control IC.

## 5.1 Source selection (Fig 5.2)

The video signal required for the main picture (chrominance and luminance), the external 2 output and the PIP picture is selected in input selection IC7219 (TEA6414).
Here the video signals may originate from:

- The front end
  The CVBS signal is supplied to pin 11 of IC7219 (TP30).
- Euroconnector 1
  The CVBS signal is supplied to pin 10 of IC7219.
  The CVBS status information (pin 8) of this euroconnector is fed to the microprocessor. The output of EXT-1 (pin 19) always receives the CVB signal from the front end (TP30).
- Euroconnector 2
  The CVBS signal is supplied from this euroconnect to pin 8 of IC7219.
  The output of EXT-2 (pin 19) receives an output signal that is selected by the selector switch (IC7219).
- The SVHS input
  Luminance is supplied to pin 6 of IC7219.
  Chrominance is supplied to pin 5 of IC7219.
  A CVBS signal is formed from the SVHS chrominance and luminance signals for the PIP module with TS7228 and TS7226.
- Ext-3 (The front CVBS connection)
  This signal is supplied to pin 3 of IC7219.

## 5.2 The luminance path

### Sharpness circuit

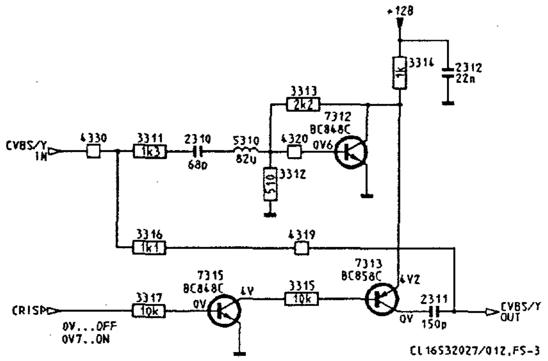

+12B
3314
1k
2312
22n
3313
2k2
7312
BC848C
CVBS/Y IN
4330
3311
1k3
2310
68p
5310
82u
4320
0V6
3312
510
3316
1k1
4319
7313
BC858C
4V2
7315
BC848C
4V
3315
10k
2311
150p
0V
CVBS/Y OUT
CRISP
3317
10k
0V
0V...OFF
0V7..ON
CL 16532027/012.F5-3

Fig. 5.3

The CVBS or Y signal coming from the video source selector is fed to the sharpness circuit. In the sharpness circuit the signal follows 2 paths, see fig 5.3.The first one is a direct path via R3316.
The second path goes via C2310, L5310 and TS7312. C2310 and L5310 form a band-pass filter tuned to approx 2 MHz. The 2 MHz component leaving this filter is amplified by TS7312.
If sharpness is switched on (crisp = high), TS7313 will conduct via TS7315 and the direct signal and the 2 MHz component will be added together.

### Chroma trap

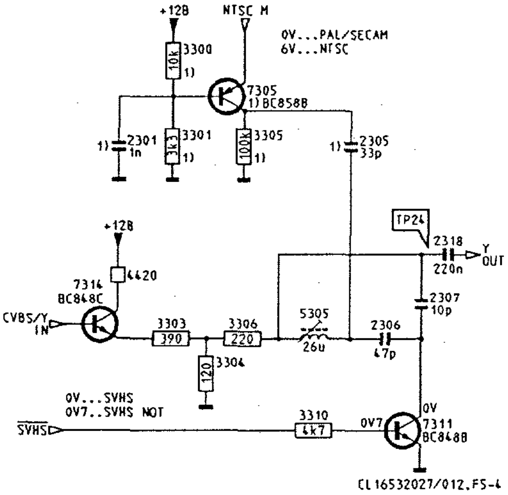
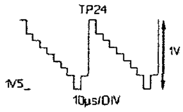

+12B
NTSC M
0V...PAL/SECAM
6V...NTSC
3300
10k
1)
7305
1) BC858B
2301
1n
1)
3301
3k3
1)
3305
100k
1)
2305
33p
1)
TP24
+12B
4420
7314
BC848C
CVBS/Y IN
3303
390
3306
220
5305
26u
2306
47p
2318
220n
Y OUT
2307
10p
3304
120
0V...SVHS
0V7..SVHS NOT
SVHS
3310
4k7
0V7
0V
7311
BC848B
CL 16532027/012.F5-4

Fig. 5.4



The CVBS or Y signal coming from the sharpness circuit is buffered in TS7314 and the level is adjusted by R3303 and R3304.
At the output of this buffer is a switchable chroma trap, see fig 5.4. The function of this filter is to suppress the chroma signal in the CVBS/Y signal. There are four possible situations:

**PAL/SECAM**
During PAL/SECAM execution the SVHS switching signal coming from the microcomputer is high. Consequently, TS7311 is conducting.
The NTSC M switching signal coming from TDA4650 is low. This means that TS7305 is blocking current.
This results in a trap composed of L5305 and C2306 which is tuned to 4.43 MHz.

**PAL/SECAM SVHS**
With a PAL/SECAM SVHS signal, the SVHS switching signal will be low. TS7311 will block current in this situation. The result is no chroma trap.

**NTSC M**
In this case both TS7305 and TS7311 will conduct. This results in a parallel switching of C2305 and C2306. The chroma trap (which was tuned to 4.43 MHz during PAL/SECAM) will be detuned at 3.58 MHz.

**NTSC M SVHS**
TS7311 blocks current and TS7305 is conducting, resulting in a trap formed by L5305 and C2305. This trap is tuned to approx. 5.5 MHz.
There is no need for a chroma trap during SVHS signals.

### Luminance delay in TDA4565

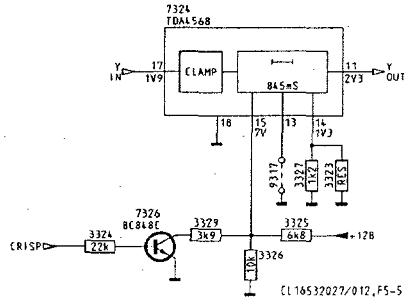

7324
TDA4568
Y IN
17
1V9
CLAMP
845mS
11
2V3
Y OUT
18
15
7V
13
14
1V3
9317
3327
1k2
3323
RES
7326
BC848C
CRISP
3324
22k
3329
3k9
3325
6k8
+12B
3326
10k
CL 16532027/012.F5-5

Fig. 5.5

The Y signal coming from the chroma trap is fed to pin 17 (TP24) of TDA4565, the input for the luminance delay line.
The delay of this delay line is adjusted by a DC voltage of 7.5V at pin 15.
If sharpness is switched on there will be less delay in the luminance line. Via TS7326 the voltage of pin 15 decreases to 0V and the delay will be adapted.

## 5.3. The chroma path

The CVBS/chroma signal is fed to a chroma band-pass filter.Two cases can be distinguished: PAL chroma band-pass filter in case of a PAL chroma decoder (TDA4510) and a Multi-standard chroma band-pass filter in case of a multi-standard chroma decoder (TDA4650).

C2338 and R3339 constitute a high-pass filter see fig 5.6. L5345 and C2345 form a suction circuit at 2.2 MHz. The parallel circuit L5346 and C2346 forms a band stop filter tuned to 5.5 MHz. All these circuits together form a band-pass filter tuned to 4.4 MHz.

### PAL chroma band-pass filter

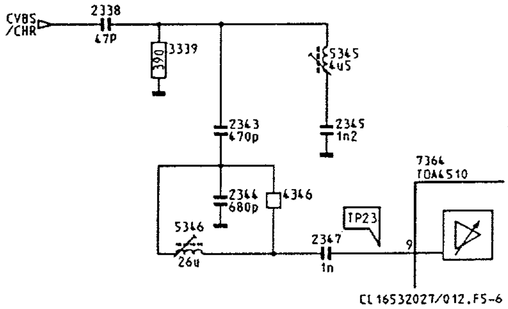
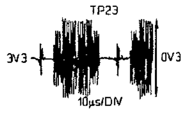

CVBS/CHR
2338
47P
3339
390
5345
4u5
2343
470p
2345
1n2
7364
TDA4510
2344
680p
4346
TP23
5346
26u
2347
1n
9
CL 16532027/012.F5-6

Fig. 5.6

### Multi chroma band-pass filter



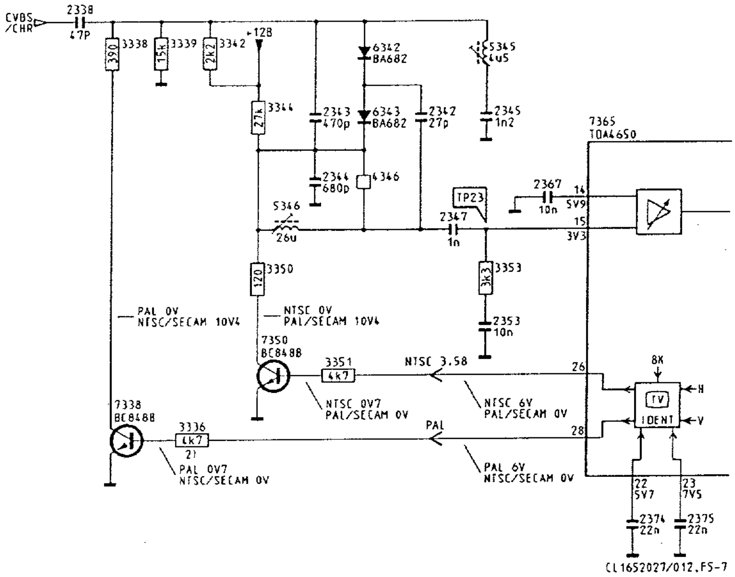

CVBS/CHR
2338
47P
390
3338
15k
3339
2k2
3342
+12B
6342
BA682
5345
4u5
27k
3344
2343
470p
6343
BA682
2342
27p
2345
1n2
7365
TDA4650
2344
680p
4346
5346
26u
TP23
2347
1n
2367
10n
14
5V9
15
3V3
120
3350
3k3
3353
PAL 0V
NTSC/SECAM 10V4
NTSC 0V
PAL/SECAM 10V4
2353
10n
7350
BC848B
3351
4k7
NTSC 3.58
26
8K
NTSC 0V7
PAL/SECAM 0V
NTSC 6V
PAL/SECAM 0V
TV
IDENT
H
V
7338
BC848B
3336
4k7
PAL
28
21
PAL 0V7
NTSC/SECAM 0V
PAL 6V
NTSC/SECAM 0V
22
5V7
23
7V5
2374
22n
2375
22n
CL 16532027/012.F5-7

Fig. 5.7

**PAL**
Here, TS7338 is driven into conduction and TS7350 is cut off. C2338 and R3338 form a high-pass filter. L5345 and C2345 form a suction circuit at 2.2 MHz. The parallel circuit L5346 and C2346 forms a high-pass filter tuned to 5.5 MHz. The total once again results in a band-pass filter tuned to 4.4 MHz.

**SECAM**
Here, both TS7338 and TS7350 are cut off. The 2.2 MHz and 5.5 MHz band-pass filters result in an inverted bell-shape curve with its maximum at approx. 4.3 MHz.

**NTSC 3.58**
Here, only TS7350 is conducting. As a result, D6342 and D6343 are also conducting, causing C2342 to be in parallel with C2346 and L5346. C2343, which forms a voltage divider with C2344, is short-circuited. The band-stop filter formed by parallel circuit L5346, C2346 and C2342 is tuned to 4.5 MHz. *The total results in a* band-pass filter tuned to 3.6 MHz.

## PAL chromadecoder

The PAL chroma signal is presented to pin 9 (TP23) of TDA4510 (fig 5.6). This signal is demodulated and decoded into baseband B-Y and R-Y signals, which are available at pins 2 and 1 (fig 5.1).

## Multi chroma decoder

The multi-standard chroma signal (PAL, SECAM or NTSC 3.58) is presented to pin 15 (TP23) of TDA4650.
The systems are recognized by the colour burst or the identification signals (in case of SECAM) on the back porch of the CVBS signal.

The identification circuit in TDA4650 (Fig. 5.8) recognizes these signals and renders one of the 4 output pins high. In this way the chroma input filter is changed over.

**Servicing hint:**
by applying 12V to one of these four pins, the switches are put in the desired positions. This can be used to facilitate fault-finding. The identification circuit changes over the necessary circuits inside the IC.

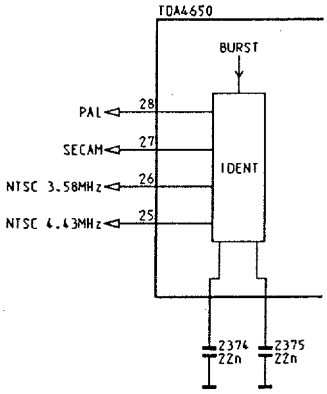
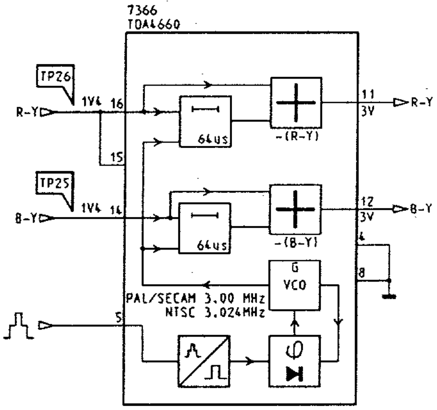

TDA4650
BURST
PAL 28
SECAM 27
NTSC 3.58MHz 26
NTSC 4.43MHz 25
IDENT
2374 22n
2375 22n
CL 16532027/012.F5-8

Fig. 5.8

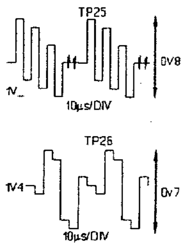
The B-Y and R-Y signals coming from the colour decoder, see fig 5.9, are fed to the baseband delay lines in TDA4660 (IC7366). The direct signals and the ones delayed one line duration are added together.

The corrected B-Y and R-Y signals appear at pins 12 and 11 of TDA4660.


7366
TDA4660
TP26
R-Y
1V4 16
15
TP25
B-Y
1V4 14
64us
64us
-(R-Y)
-(B-Y)
11 3V
R-Y
12 3V
B-Y
4
8
G
VCO
PAL/SECAM 3.00 MHz
NTSC 3.024MHz
5

CL 16532027/012.F5-9

Fig. 5.9



## 5.4 The RGB matrix (and source selection)

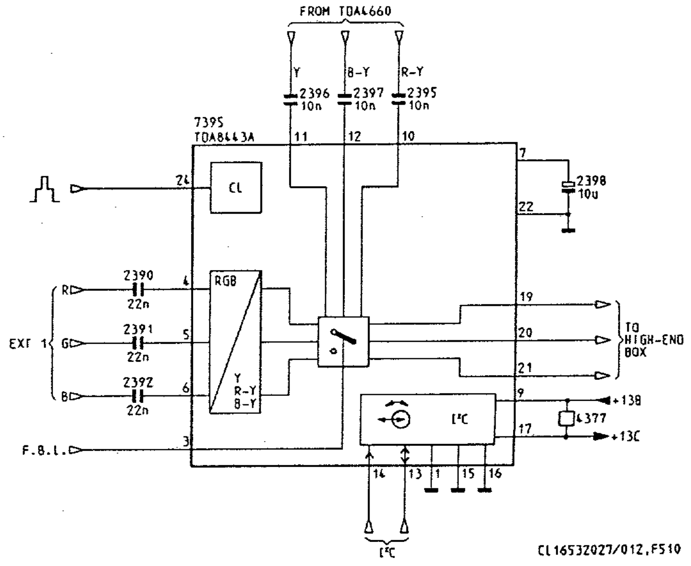

FROM TDA4660
Y
B-Y
R-Y
2396 10n
2397 10n
2395 10n
7395
TDA8443A
11
12
10
7
2398 10u
22
24
CL
EXT 1
R
G
B
2390 22n
2391 22n
2392 22n
4
5
6
RGB
Y
R-Y
B-Y
19
20
21
TO HIGH-END BOX
9
17
+13B
4377
+13C
I²C
F.B.L.
3
14
13
1
15
16
I²C
CL 16532027/012.F510

Fig. 5.10

In IC7395 the R,G,B signals coming from Euroconnector EXT 1 are converted into R-Y, B-Y and Y signals. Then, using the RGB status (pin 3) a choice is made between these signals formed from R,G,B and the signals coming from the chrominance and luminance processing.
*The selected signals are supplied to the high-end box via pins 19, 20 and 21.*

# 5.5 The high-end box

## The principle of time compression

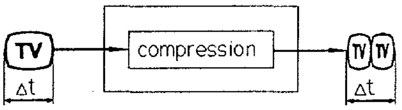


Fig. 5.11

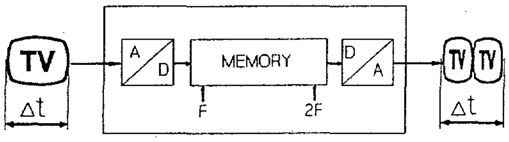


Fig. 5.12

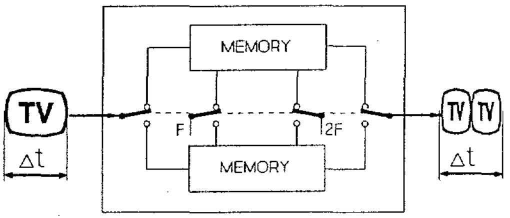


Fig. 5.13

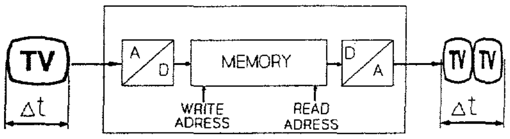


Fig. 5.14

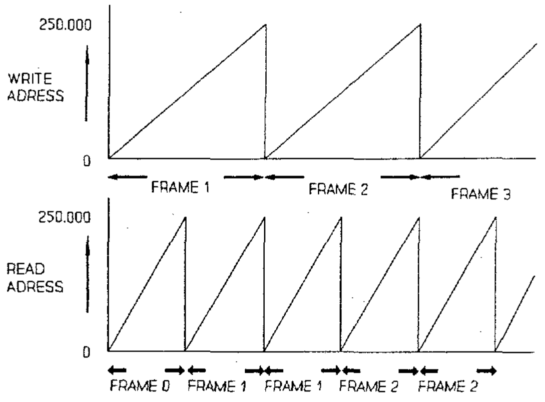


Fig. 5.15

As in a 100 Hz colour television receiver each picture must be written twice, in the same time span as a single picture with a 50 Hz receiver the video information must be doubled and compressed in time (fig. 5.11).

In practice this time compression is frequently carried out as follows (fig. 5.12).
The incoming video signal is digitised by an analogue-to-digital converter. Using a write clock signal with frequency F, the digitised picture information is then written to the memory.

Then with a read clock signal of frequency 2F the digitised picture information is read twice from the memory. As the reading out twice takes place twice as quickly, it takes just as long as writing once. The read-out signal is then made analogue again with a digital-to-analogue converter.

In order to obtain continuous time compression two memories are frequently used (fig. 5.13), where writing to memory I and reading from memory II (2x) is always alternated with reading from memory I (2x) and writing to memory II.
Signal compression in the high-end box.

Time compression in the 100 Hz conversion box of chassis FL1
is always carried out on a complete frame. As when using the previously described method two complete frame memories (total approximately 10 Mbit) are required in that case, in order to save memory use is made of another method in the FL1 conversion box (fig. 5.14).

Here one memory block is used which can contain a complete frame, where writing and reading can take place at the same time. Writing takes place here on a write address to be given and reading on a read address to be given.

The read and write addresses are controlled as shown in fig. 5.15. As shown in fig. 5.15, one frame is still being read out when the following is already written. Halfway through the writing of a frame the reading of that frame starts for the first time. Just before the following frame is written, the reading of the previous frame starts again.

For precise conversion of a complete frame each time the memory addressing signals must be coordinated precisely. This is done using the line and frame synchronisation signals. In order to reproduce picture signals compressed in time, the corresponding synchronisation signals must also be accelerated. As with these signals the phase and frequency are important, they are not generated with a memory but by software. Because the line and frame synchronisation signals are required for both memory addressing and synchronisation conversion, the frame and line synchronisation production and the read and write signal generation can be easily combined.

## lock diagram

The total block diagram looks as follows.

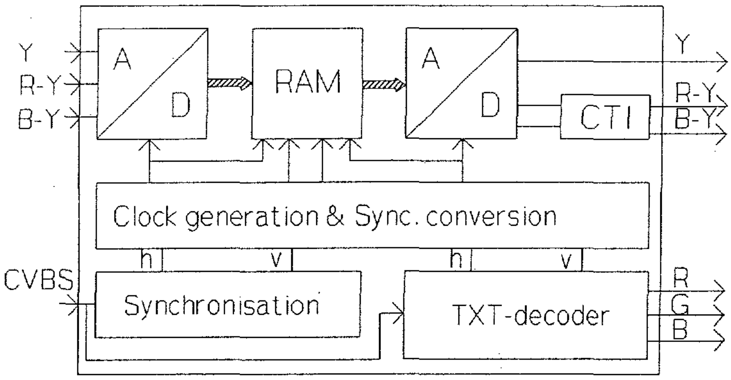


Fig. 5.16

The following parts can be distinguished here:

**The synchronisation**
IC7203 (TDA2579) supplies the synchronisation of the input signal of the high-end box for the operation (transmitter recognition and coincidence), the teletext decoder and the 100 Hz conversion control.

**The digital video processing section**
*in which the incoming* Y, R-Y *and* B-Y *signals are digitised,* converted into signals with a frame frequency of 100 Hz and than made analogue again. This is done using clock signals from the clock generation section.

**The clock generation synchronisation conversion section**
in which the clock signals for the digital video processing section are generated using the incoming frame and line synchronisation signals, and in which the 100 Hz/31250 Hz frame and line synchronisation signals are also produced.

**The teletext decoder**
in which the teletext information which is sent together with the transmitter signal is decoded and teletext pages are generated for reproduction on the screen.

**The CTI (colour transient improvement)**
with which the colour transitions are improved. Because these transitions are also affected by the doubling of the frame and line frequency, this improvement cannot be made on the 50 Hz signal side.

# Synchronisation

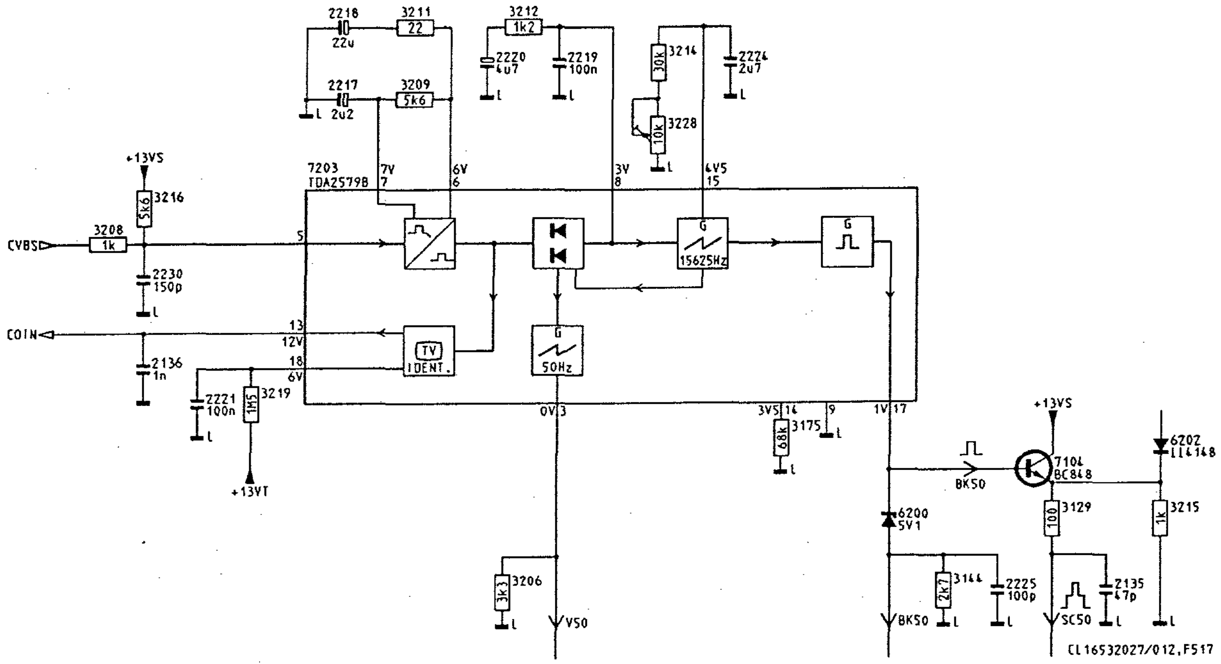

2218
22u
3211
22
2217
2u2
3209
5k6
3212
1k2
2220
4u7
2219
100n
3214
30k
3228
10k
2224
2u7
+13VS
3216
5k6
3208
1k
CVBS
2230
150p
COIN
2136
1n
2221
100n
3219
1M5
+13VT
7203
TDA2579B
7V
7
6V
6
3V
8
4V5
15
5
13
12V
18
6V
G
15625Hz
TV
IDENT.
50Hz
0V
3
3V5
14
9
3175
68k
1V
17
3206
3k3
V50
6200
5V1
BK50
3144
2k7
2225
100p
+13VS
7104
BC848
3129
100
6202
1N4148
3215
1k
2135
47p
SC50
L
CL16532027/012.F517

Fig. 5.17

## Sync. separator

The CVBS signal goes to the sync. separator (A) via pin 5-IC7400. This detects the sync-top level and black level and stores them in C2217 and C2218, pin 6-IC7400 and pin 7-IC7400, respectively.

## Time constants

The synchronisation can operate with 3 different control speeds depending on the quality and the size of the CVBS signal supplied at pin 5-IC7400. It is possible to measure which time constant is switched on at pin 18-IC7400.

## Line oscillator

The horizontal oscillator (B) operates with the charging and discharging of C2224 at pin 15-IC7400. R3228 enables control of the charging and discharging time and thus the free-running oscillator frequency can be adjusted.
The free-running frequency can be adjusted by short circuiting the CVBS signal at pin 5 to earth and making the picture stable with R3228.
The burst-key pulse which is carried out via pin 17 is generated from the horizontal oscillator.

## Vertical synchronisation

The vertical synchronisation (C) is derived from the horizontal synchronisation.
The vertical synchronisation signal is taken to the 100 Hz conversion control via pin 3.

## Sandcastle generator

A sandcastle pulse is built up from the burst-key pulse at pin 17-IC7400 and the blanking pulse generated by the 100 Hz conversion control. This output signal has two levels:
1: 11V burst-key
2: 4.5V line blanking

This sandcastle pulse is taken to the small signal panel and is used by the chrominance decoder.

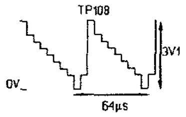
# The teletext decoder

The teletext decoder consists of a video input processor (IC7200/SAA5235), a computer-controlled teletext IC (IC7201/SAA9042) and a RAM memory (Random Access Memory) (IC7202/41464). For a detailed description of computer- controlled teletext, see the CCT description published previously (4822 727 ....). The teletext decoder used here is different to the extent that the pages are generated with a 100 Hz frame frequency. Together with the corresponding fast blanking signal, the R,G,B signals produced are taken to the video controller on the small signal panel via pins 1 to 4 of connector H20.

# The digital video processing

The signal path for the Y signal is described in this section. If the signal path for the R-Y and B-Y is different, this is also described.

## The input circuit



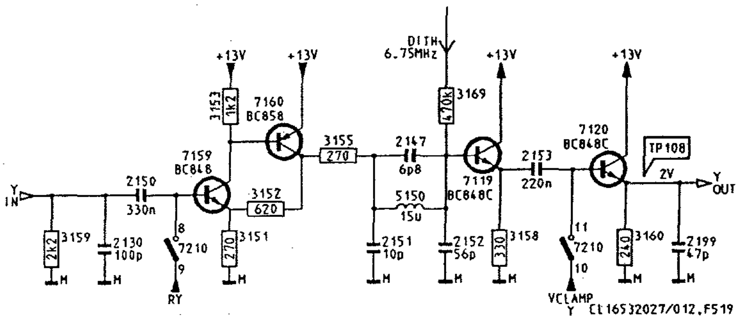

+13V
+13V
DITH 6.75MHz
+13V
+13V
3153 1k2
7160 BC858
3169 470k
7120 BC848C
TP108
2V
Y OUT
3155 270
2147 6p8
2153 220n
7159 BC848
2150 330n
Y IN
3152 620
5150 15u
7119 BC848C
3159 2k2
2130 100p
8
7210
9
RY
3151 270
2151 10p
2152 56p
3158 330
11
7210
10
VCLAMP Y
3160 240
2199 47p
M
CL16532027/012.F519

Fig. 5.18

The incoming Y signal via plug 3H22 is from the RGB converter TDA8443 on the small signal panel. The Y signal is first clamped with the burst-key pulse on a reference voltage using a switch in IC7210 and buffered with TS7159 and TS7160. The R-Y and B-Y signals are not clamped here.
Via a low-pass filter (formed by C2151, C2147, C2152 and L5150) and emitter followers TS7119 and TS7120, this signal goes to the analogue-to-digital converter (IC7213).
Via resistor R3169 a 6.75 MHz clock signal is added to the Y signal. The resistance value of R3169 is set so that the level of this signal is equal to half of the signal level of the least important bit used. This means that normally this signal will not be visible in the picture. However, in the case of a slow transition the signal becomes visible now and then, which results in an apparent improvement in the resolution.
The signal is clamped again after capacitor C2153.

## The A/D converter

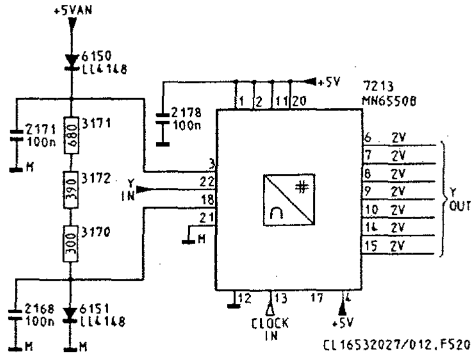
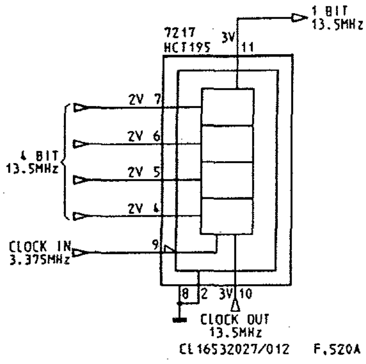

+5VAN
6150 LL4148
2171 100n
3171 680
3172 390
3170 300
2168 100n
6151 LL4148
M
2178 100n
+5V
1 2 11 20
7213 MN65508
3
22
18
21
Y IN
6 2V
7 2V
8 2V
9 2V
10 2V
14 2V
15 2V
Y OUT
12 13 17 4
CLOCK IN
+5V
CL16532027/012.F520

Fig. 5.19

The analogue-to-digital converter (ADC) receives the Y signal at pin 22 and a clock signal at pin 13. The clock frequency is 13.5 Mhz, which results in a maximum video bandwidth of 6.75 Mhz. The reference voltages of these ADCs are 4V3 (+5V - 0V7 (over D6150)) at pin 3 and 0.7V (over D6151) at pin 18.
The analogue-to-digital converter converts the input signal into a 7-bit code at pins 6,7,8,9,10,14 and 15.

## -Y and B-Y bit rate conversion

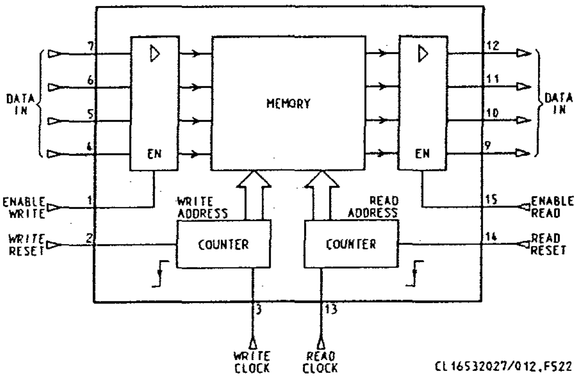

7217
HCT195
3V
11
1 BIT
13.5MHz
2V 7
2V 6
2V 5
2V 4
4 BIT
13.5MHz
CLOCK IN
3.375MHz
9
8
2
3V
10
CLOCK OUT
13.5MHz

CL 16532027/012 F.520A

Fig. 5.20

## he memories

The converted digital Y information is supplied to the memory. The converted digital R-Y and B-Y information does not go directly to the memory, but goes first to the shift registers IC7214 to IC7217. These signals do not in fact need the bandwidth of the A/D converter (6.75 MHz) (a bandwidth of 1.5 MHz is more than adequate). The R-Y and B-Y data are thus first reduced in bandwidth by a factor of 4. This is done by reading them in to the shift registers with a clock frequency of 3.375 MHz (CLK2) (for each 4 bits 3 are thrown away here).
The bits are then read out serially with a clock frequency of 13.5 MHz. Four parallel bits now remain of the 14 original parallel R-Y and B-Y bits.
These bits are now taken to the memory.


DATA IN
7
6
5
4
MEMORY
EN
EN
12
11
10
9
DATA IN
ENABLE WRITE
1
WRITE RESET
2
WRITE ADDRESS
READ ADDRESS
COUNTER
COUNTER
15
ENABLE READ
14
READ RESET
3
13
WRITE CLOCK
READ CLOCK

CL 16532027/012.F522

Fig. 5.21

The memory used is built up of 3 special video memories each of 1 Mbit (total 3 Mbit).
As the memory ICs can operate in parallel, they can all operate with the same clock signals. The memories are built up as follows (fig. 5.21).

There are 250,000 memory locations for 4 bits. The memory address written to is determined by the write address counter. This increases the write address by 1 for each clock pulse (starting with address 000000). If a reset pulse is given, the counter is blocked and the counter is set to zero on the down-sloping flank of this pulse, after which a new cycle will start. As the reset pulse is also linked with the write enable input, it is not possible to write during the reset pulse. The memory is read out in the same way, however the read and write address counters are given separate pulses. The write clock frequency is 13.5 MHz, and the read clock frequency is 27 MHz. The repetition frequency of the write reset pulse is 50 Hz and that of the read reset pulse 100 Hz. With a write clock frequency of 13.5 MHz, 18.5 ms of video information can be written to this memory. As one frame lasts 20 ms, information must be thrown away. This is done by not writing the invisible lines during the frame flyback.

The digitised picture information is read from the RAMs at pins 9 to 12. The pull-up resistors at the outputs ensure that the outputs do not stray during a read enable (during the reset pulse), but are defined high.

## The D/

## CTI

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h clock
is
zero
new
:he
e reset
ɜver the
lses.
:lock
write
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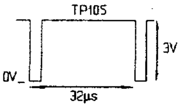
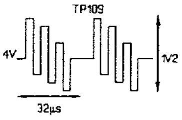
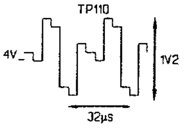
## The D/A converters







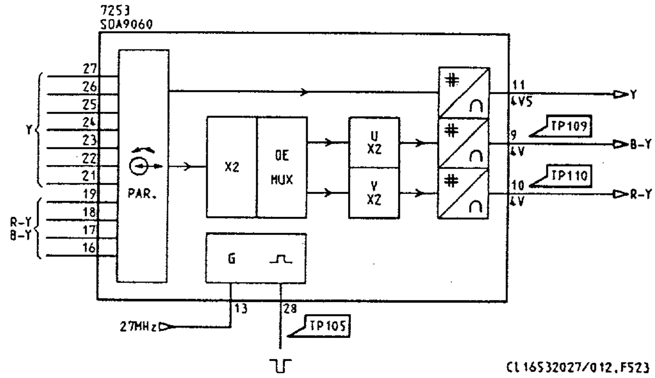

7253
SDA9060
27
26
25
24
23
22
21
19
18
17
16
Y
R-Y
B-Y
PAR.
X2
DE
MUX
U
X2
V
X2
G
11
4V5
9
4V
10
4V
TP109
TP110
Y
B-Y
R-Y
13
28
27MHz
TP105
CL 16532027/012.F523

Fig. 5.22

The 100 Hz Y, R-Y and B-Y information is supplied to a digital-to-analogue converter (IC7253). The 4-bit R-Y/B-Y information is converted here to 7-bit R-Y and 7-bit B-Y, with a sample frequency of 27 MHz. Y, R-Y and B-Y then go to 3 A/D converters, after which they leave IC7253 again at pins 11, 9 and 10.
The read clock signal (27 MHz) comes in at pin 13 of the digital-to-analogue converter and this is used as a conversion clock. Pin 8 is the reference input. The reference is obtained from D6250.

## CTI

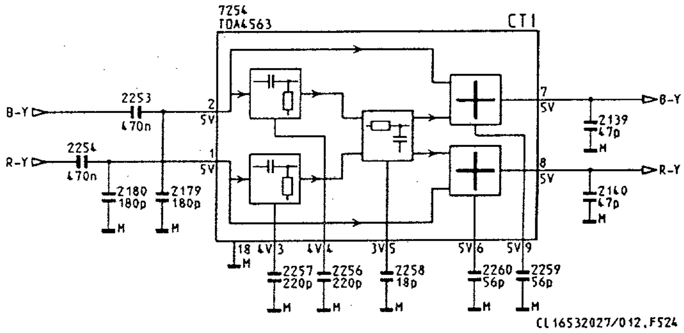

7254
TDA4563
CTI
B-Y
R-Y
2253
470n
2254
470n
2
5V
1
5V
2180
180p
2179
180p
M
7
5V
8
5V
2139
47p
2140
47p
B-Y
R-Y
18
4V 3
4V 4
3V 5
5V 6
5V 9
2257
220p
2256
220p
2258
18p
2260
56p
2259
56p
CL 16532027/012.F524

Fig. 5.23

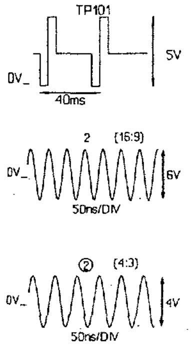
The Y-signal of the D/A converter first goes through a low-pass filter L5102/C2125.
R-Y and B-Y go to IC7254 for colour transient improvement. In the R-Y and B-Y signal path the steep signal flanks, colour transients thus, are made even steeper. At points where there are no steep flanks in the colour difference signals, colour surfaces for example, the input signals are passed on unchanged to the output.

# The clock generator synchronisation converter

Microcomputer IC7204 (8051) and IC7205 (Programmable Signal Placer) together form the core of the clock generator and synchronisation conversion section. Using the connected electronics, the following subfunctions are available:
- The write clock generator
- The read clock generator
- The reset generation
- The synchronisation conversion
- The sandcastle generation
- The (non) interlace compensation
- The "watch dog" generator

These various functions are now discussed below.

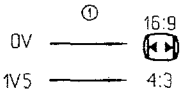
## The 13.5 MHz write clock generator
(Fig. 5.24)



The write clock generator is built up around transistor T7116. Together with L5100 and C2111, this forms a free-running oscillator which is tuned to approximately 13.5 MHz. Via inverters in IC7206, the signal is supplied to pin 40 of IC7204. This is the input of a frequency divider. There is now a derived clock frequency at pins 41 to 45, or equal to the input clock divided by 2, 3, 4, 6 and 12. Of these the signal at pin 41 (6.75 MHz) divided by 2 is used in the input circuit. As this clock generator works independently of the other section of IC7507, these signals must always be present.
A derived frequency divided by 864 (= 15625 Hz) is supplied to a phase comparator (MC1 HI count). This compares this frequency with the burst-key information which comes in at pin 2. The phase information obtained from this comparison (DBK = digital burst-key) is carried out via pin 1 and is used to adjust the oscillator around transistor T7116 with varicap diode D6102 via R3119 and R3121.

If the control loop is working properly, the oscillator frequency must be exactly 13.5 MHz (when a standard TV signal is used). If this is the case, then in addition to a part of IC7205, a part of IC7204 also works and the communication between these ICs.

## 4:3 compress mode (only for FL1.2)



If the unit is switched to 4:3 mode, the picture must be reduced horizontally. This is done by reducing the frequency of the read-in clock from 13.5 MHz to 10.125 MHz. If the reading out of the memory is also delayed slightly, a 4:3 picture will now appear in the centre of the screen.
The oscillation frequency is reduced as follows.
Pin 25/IC7204 is normally high, TS7102 conducts and diodes D6106 and D6107 conduct. Coil L5110 is now bypassed by D6107 and will not affect the oscillation circuit. The oscillation frequency is now 13.5 MHz.
In 4:3 mode pin 25 will be low and TS7102, D6106 and D6107 do not conduct. Coil L5110 now affects the oscillation frequency and will shift this to 10.125 MHz. In order to achieve this, the control circuit must also be modified. The oscillation frequency is thus now divided by IC7205 by 648 (= 15625 Hz) before this is compared with the 50 Hz burstkey.

Movie

7205
UPD912
DIV.
RST
RST
MC1
HI
COUNTER
CONTATORE
2V
2V
2V
2V

The 2

:ion

ımable
nerator
ɔnnected

ır T7116.
unning
. Via
ɔf
re is now
to the
e signal
ɹt circuit.
ɔther
sent.
ɜ supplied
ɜs this
es in at
parison
is used
varicap

be
ɜquency
If the
4:3

nd diodes
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and

ɬz. In

ed by
ɜd with

## Movie expand

In the movie-expand mode a 4:3 picture is reproduced horizontally as a 16:9 picture and in addition expanded vertically. This vertical expansion does not take place in the high-end box, but in the vertical deflection circuit (Section 6 The read-in clock in the high-end box in this case is at 13.5 MHz.

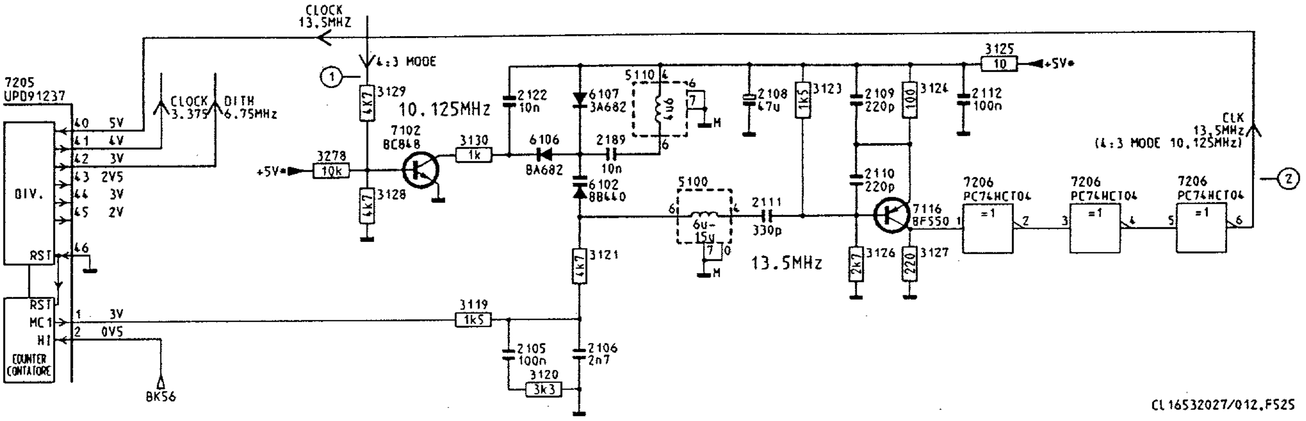

CLOCK 13.5MHZ
4:3 MODE
①
7205
UPD91237
DIV.
RST
40 5V
41 4V
42 3V
43 2V5
44 3V
45 2V
46
CLOCK 3.375
DITH 6.75MHz
RST
MC1
HI
COUNTER CONTATORE
1 3V
2 0V5
BK56
3129 4K7
10.125MHz
7102 BC848
3278 10k
+5V
3128 4K7
3130 1k
2122 10n
6106 BA682
6107 BA682
2189 10n
6102 BB440
5110
4u6
M
5100
6u-15u
M
2108 47u
3123 1k5
2109 220p
3124 100
2112 100n
3125 10
+5V
2110 220p
2111 330p
13.5MHz
7116 BF550
3126 2k7
3127 220
3121 4K7
3119 1k5
2105 100n
2106 2n7
3120 3k3
7206 PC74HCT04
=1
CLK 13.5MHz (4:3 MODE 10.125MHz)
②
CL 16532027/012.F525

Fig. 5.24

## The 27 MHz read clock generator.

The read clock generator is built up around transistor 7117. The read clock generator is also a free-running oscillator which is set to approximately 27 MHz with L5101/C2117. Via inverters in IC7207, this oscillator signal is supplied to a frequency divider in IC7205 (pin 33). This divider works independently of the other part of IC7507, and supplies the clock frequency divided by 12, 6, 4, 3 or 2 at pins 28 to 32 A signal divided by 1728 (15625 Hz) is supplied to a phase comparator (MC2 HU count) which compares this signal witl the burst-key signal.

The phase information obtained from this comparison comes at pin 26 from the IC, passes the low-pass filter R3140/R3138/C2188 and via R3137 adjusts with varicap diode D6103 the oscillation frequency of the oscillator built up around TS7117.

If the control is working properly, the oscillation frequency must be exactly 27 MHz (when a standard TV signal is used

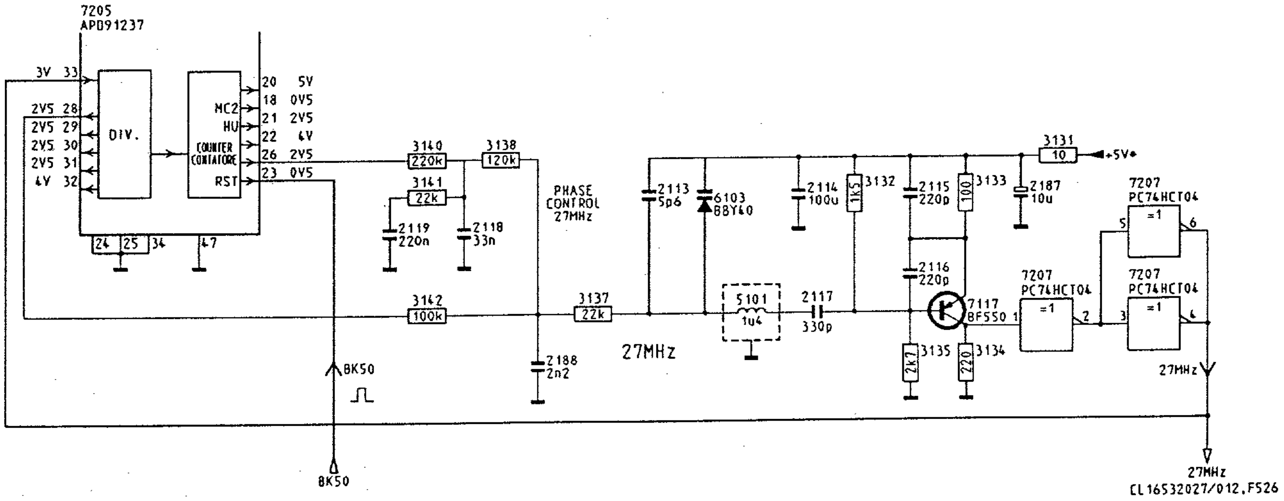

7205
APD91237
3V 33
2V5 28
2V5 29
2V5 30
2V5 31
4V 32
DIV.
MC2
HU
COUNTER CONTATORE
RST
20 5V
18 0V5
21 2V5
22 4V
26 2V5
23 0V5
24 25 34 47
3140 220k
3138 120k
3141 22k
2119 220n
2118 33n
3142 100k
PHASE CONTROL 27MHz
3137 22k
2188 2n2
BK50
BK50
2113 5p6
6103 BBY40
27MHz
5101 1u4
2117 330p
2114 100u
3132 1k5
2115 220p
3133 100
2187 10u
3131 10
+5V
2116 220p
7117 BF550
3135 2k7
3134 220
7207 PC74HCT04
=1
27MHz
27MHz
CL 16532027/012.F526

Fig. 5.25

## Reset generation

From the incoming 50 Hz frame synchronisation signal, the incoming burst-key signal (BK) and the generated write clock signal, a write reset signal (WR) is generated (pin 37), which ensures that one complete frame is always written to the memory. From the generated 100 Hz frame synchronisation signal, the generated line sync. signal and the generated read clock signal, a read reset signal (RR) is generated (pin 36), which ensures that one complete frame is always read twice from the memory. These signals must be generated accurately so that the correct frame is always written or read. The signals look as follows (fig. 5.26).

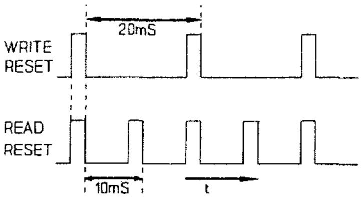


Fig. 5.26

## Synchronisation conversion

Horizontal (31250 Hz) and vertical (100 Hz) synchronisation pulses (coming from pin 18 and pin 19, respectively) are generated by IC7204 and IC7205. Via TS7112 and TS7106, they are added together and supplied as a composite synchronisation signal to the small signal panel via connector 6H20.

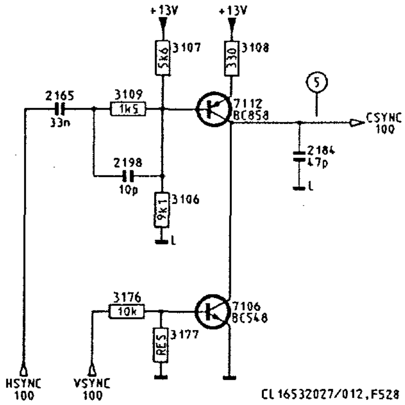

+13V
+13V
5k6
3107
330
3108
2165
33n
3109
1k5
7112
BC858
5
CSYNC 100
2184
47p
2198
10p
9k1
3106
3176
10k
7106
BC548
RES
3177
HSYNC 100
VSYNC 100
CL 16532027/012.F528

Fig. 5.27

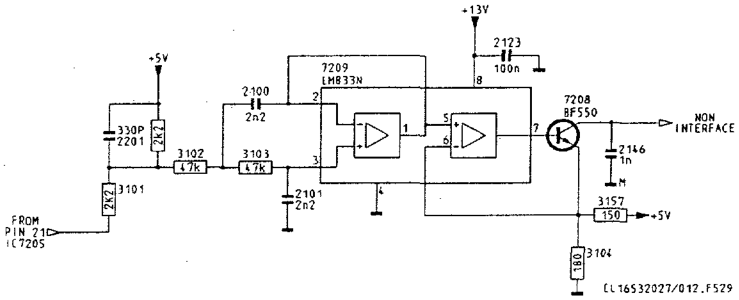

+13V
2123
100n
+5V
7209
LM833N
2100
2n2
330P
2201
2K2
3102
47k
3103
47k
2101
2n2
3101
2K2
FROM PIN 21
IC7205
7208
BF550
NON INTERFACE
2146
1n
3157
150
+5V
180
3104
CL 16532027/012.F529

Fig. 5.28

## Interlacing compensation

In order to reproduce teletext information non-interlaced, a NIL signal is generated at pin 21/IC7205; this is amplified by IC7209 and sent to the vertical deflection via TS7108 and 7H20.

## The "watch dog" generator

The circuit around transistors T7113, T7100 and T7103 is a "watch dog" generator. Its function is to check that microcomputer IC7204 is working. If it is not, the circuit will give reset pulses in order to start up the microcomputer. This circuit works as follows:

TS7100 would normally be opened via R3122, which would then make TS7103 conduct, after which a reset pulse is given to pin 9/IC7204.

During the programme of IC7204, however, pin 7 is made alternately high and low. The pulses generated in this way are passed to TS7113 by C2121. These will now conduct periodically, which charges C2104. Consequently, the emitter of TS7100 has a higher voltage and will therefore not start to conduct. However, as soon as the programme of IC7204 stops, the pulse train at pin 7 will disappear and a reset pulse will be generated at pin 9.

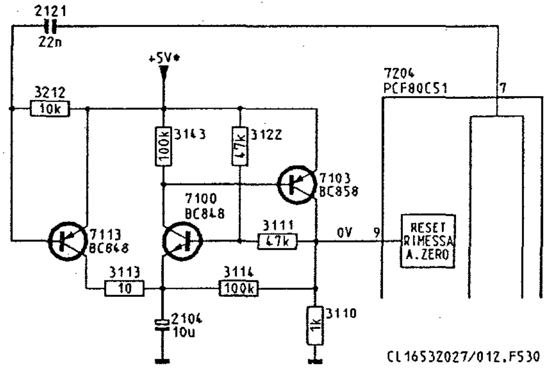

2121
22n
+5V*
3212
10k
100k
3143
47k
3122
7204
PCF80C51
7103
BC858
7100
BC848
7113
BC848
3111
47k
0V
RESET RIMESSA A.ZERO
3113
10
3114
100k
2104
10u
1k
3110
CL 16532027/012.F530

Fig. 5.29

## 5.6 SCAVEM (FL1.2)

R-Y, B-Y and Y for the main signal and R,G and B of teletext come from the high-end box. Together with the PIP signal, these are supplied to the video controller. The Y signal coming from the high-end box also goes to the SCAVEM circuit.

### Introduction

A picture tube has a fairly large capacity relatively speaking (in electrical terms it can be regarded as a capacitor). Consequently, white to black transitions are reproduced less quickly than black to white transitions. In fact, in the first case the picture tube capacity must be discharged. With a 4:3 receiver this is not a problem, however with a 16:9 receiver the picture is stretched horizontally, which means that these transitions can be seen more clearly. SCAVEM is added in order to obtain even black/white and white/black transitions.

### SCAVEM

SCAVEM stands for **SCA**n **VE**locity **M**odulation. Here the velocity of the electron beam is adjusted horizontally over the screen depending on the picture content. The velocity of the beam is increased with black/white transitions (they are thus less sharp) and reduced with white/black transitions (they are made sharper).

In FL1.2 SCAVEM is built up on 2 panels: the SCAVEM filter panel and the SCAVEM amplifier panel. In addition, there is an extra coil attached to the neck of the tube which carries out the actual modulation.

### SCAVEM filter

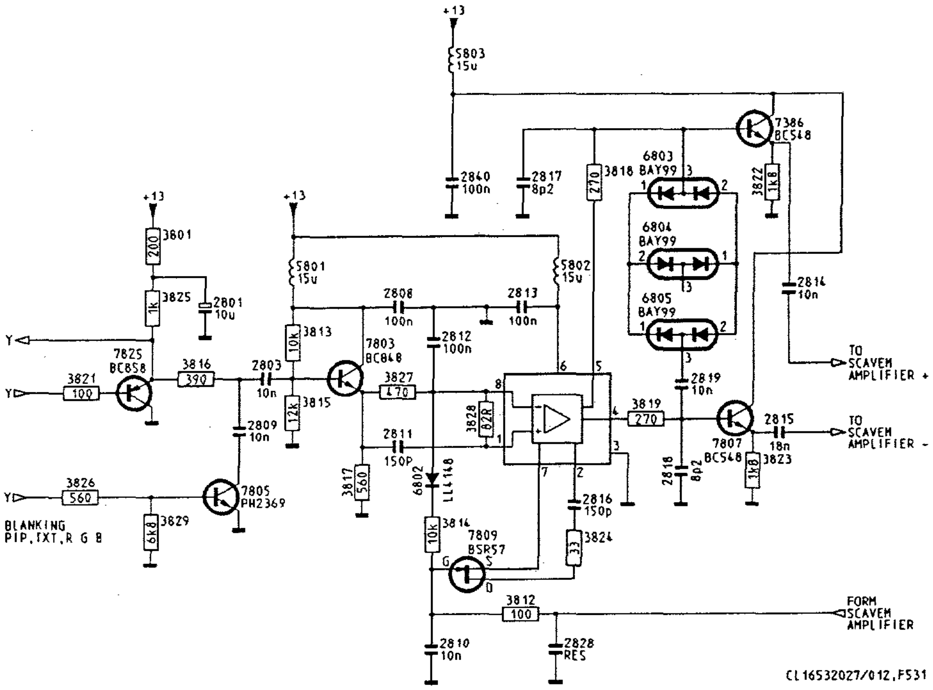

+13
5803
15u
2840
100n
2817
8p2
3818
270
6803
BAY99
7386
BC548
3822
1k8
6804
BAY99
6805
BAY99
2814
10n
+13
3801
200
+13
5801
15u
5802
15u
3825
1k
2801
10u
2808
100n
2813
100n
Y
3813
10k
2812
100n
7825
BC858
7803
BC848
3821
100
3816
390
2803
10n
3827
470
3815
12k
3828
82R
3819
270
2819
10n
7807
BC548
2815
18n
3823
1k8
2809
10n
2811
150P
2818
8p2
3826
560
7805
PH2369
3817
560
6802
LL4148
2816
150p
BLANKING
PIP,TXT,R G B
3829
6k8
3814
10k
7809
BSR57
G
S
D
3824
33
3812
100
2810
10n
2828
RES
TO SCAVEM AMPLIFIER +
TO SCAVEM AMPLIFIER -
FORM SCAVEM AMPLIFIER
CL16532027/012.F531

Fig. 5.30

The incoming Y signal is buffered and amplified with TS7801 and TS7802. The signal then goes through a low-pass filter with a cut-off frequency of 12 MHz.

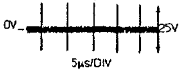
Transistor TS7805 is supplied with the blanking signals of teletext and PIP. Here the Y signal is suppressed during the reproduction of these signals because no modulation can take place on this.

The signal is buffered again and then goes to IC7804. IC7804(NE592) is a symmetric video amplifier. Its output signal is a symmetric signal: the two signals are thus identical, but in opposite phase.

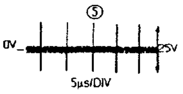
A three-times differentiator is built up around this amplifier. The first differentiator consists of the input circuit R3827, C2811 and C2812, the second of the feedback R3824, C2816 and the first of the output filters R3819, R3818, C2818 and C2817. The high frequencies in the video signal (and thus the sharp transitions) are amplified by these differentiators. TS7809 normally conducts, however if the SCAVEM amplifier becomes overloaded, it will stop conducting, which means that the amplification and with it the signal level decrease. The diode bridge D6803, D6804 and D6805 limits the signal amplitude to 1 V4. Transistors TS7806 and TS7807 buffer the symmetric signal, after which it goes to the SCAVEM amplifier panel.

## SCAVEM amplifier

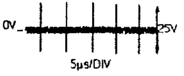
④

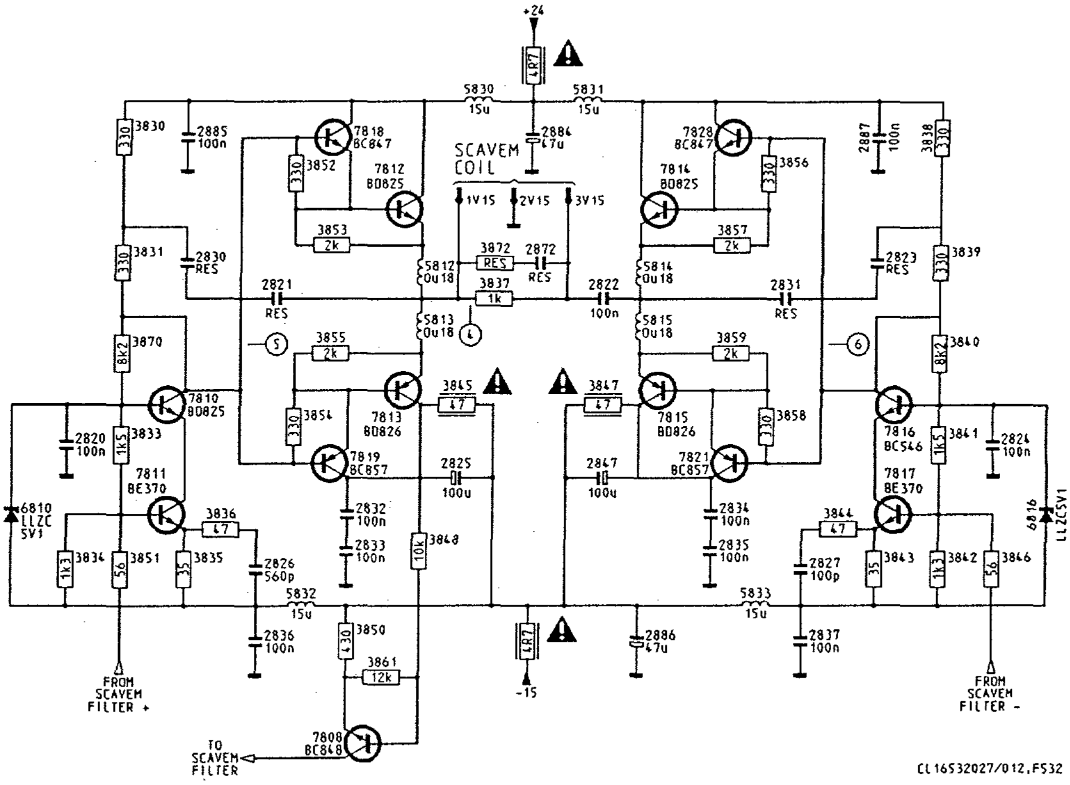


⑤



⑥



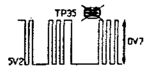


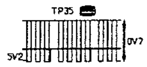
+24
4R7
5830
15u
5831
15u
2884
47u
SCAVEM
COIL
1V15
2V15
3V15
3830
330
2885
100n
7818
BC847
3852
330
7812
BD825
3853
2k
3831
330
2830
RES
2821
RES
5812
0u18
3872
RES
2872
RES
3837
1k
5813
0u18
2822
100n
5814
0u18
5815
0u18
7828
BC847
7814
BD825
3856
330
3857
2k
2887
100n
3838
330
2823
RES
3839
330
2831
RES
3870
8k2
3855
2k
3859
2k
3840
8k2
7810
BD825
7813
BD826
3845
47
3847
47
7815
BD826
7816
BC546
3854
330
3858
330
2820
100n
3833
1k5
7819
BC857
2825
100u
2847
100u
7821
BC857
3841
1k5
2824
100n
7811
BE370
7817
BE370
6810
LLZC
5V1
3836
47
2832
100n
2833
100n
3848
10k
2834
100n
2835
100n
3844
47
6816
LLZC5V1
3834
1k3
3851
56
3835
35
2826
560p
5832
15u
2827
100p
5833
15u
3843
35
3842
1k3
3846
56
2836
100n
3850
430
4R7
2886
47u
2837
100n
3861
12k
-15
FROM
SCAVEM
FILTER +
FROM
SCAVEM
FILTER -
TO
SCAVEM
FILTER
7808
BC848
CL 16532027/012.FS32

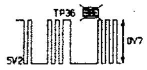
Fig. 5.31

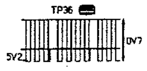
There are two identical amplifiers on the SCAVEM amplifier panel. These consist of a voltage amplifier around TS7810 and TS7811 (TS7816 and TS7817) and a current amplifier around TS7812 and TS7813 (TS7814 and TS7815). The two amplifiers together control the SCAVEM coil. The current through the coil is measured over C2832 and C2833. If it is too high, TS7809 will start to conduct, which adjusts back the amplification on the filter panel.

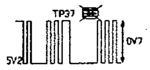
## 5.7 Video controller (TDA4680)

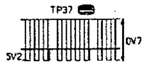


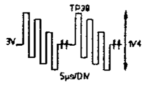


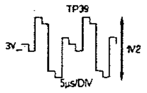


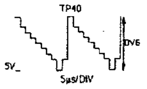


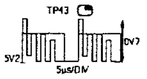


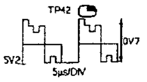


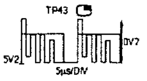


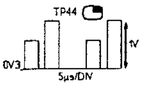












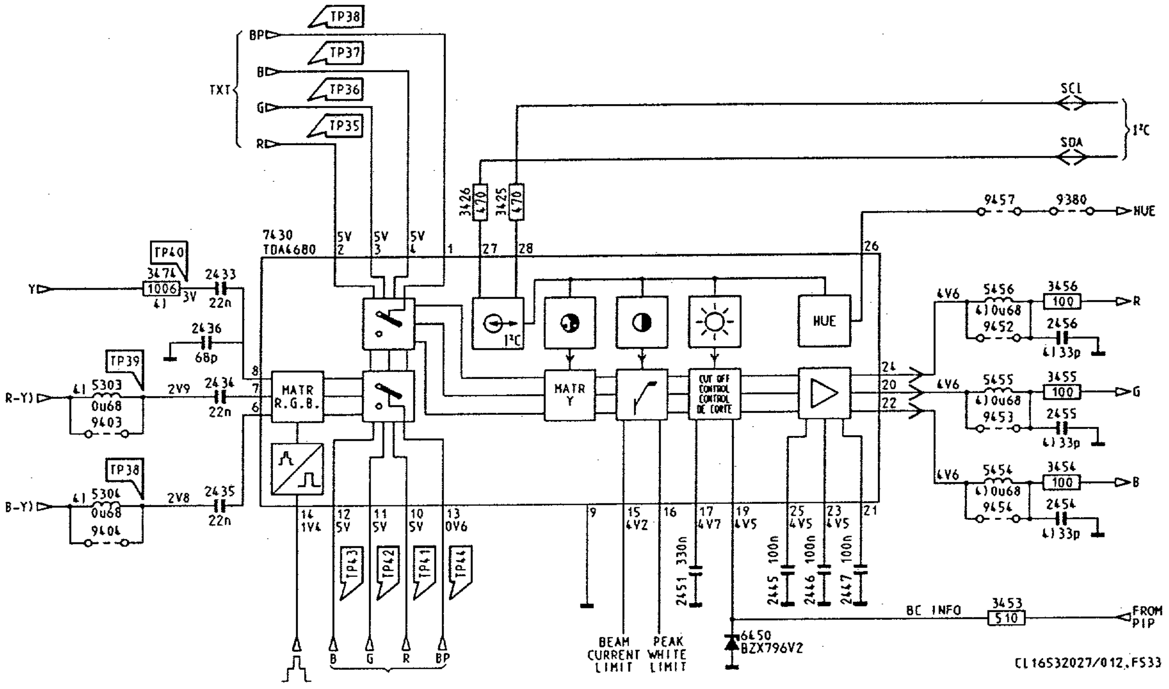

TXT
BP
B
G
R
TP38
TP37
TP36
TP35
SCL
SDA
I²C
3426 470
3425 470
9457
9380
HUE
7430 TDA4680
Y
TP40
3474 100Ω
3V
2433 22n
2436 68p
R-Y
TP39
5303 0u68
9403
2V9
2434 22n
B-Y
TP38
5304 0u68
9404
2V8
2435 22n
MATR R.G.B.
MATR Y
I²C
HUE
CUT OFF CONTROL
4V6
5456 0u68
9452
3456 100
2456 33p
R
5455 0u68
9453
3455 100
2455 33p
G
5454 0u68
9454
3454 100
2454 33p
B
1V4
5V
5V
5V
0V6
TP43
TP42
TP41
TP44
4V2
4V7
4V5
4V5
4V5
2451 330n
2445 100n
2446 100n
2447 100n
BC INFO
3453 510
FROM PIP
6450 BZX79 6V2
BEAM CURRENT LIMIT
PEAK WHITE LIMIT
B
G
R
BP
CL 16532027/012.F533

Fig. 5.32

The video control IC receives 3 input signals:

a. Y (TP40), -(R-Y) (TP39) and -(B-Y) (TP38) signals supplied by the High-end box.
b. R(TP41), G(TP42) and B(TP43) signals + RGB blanking supplied by the PIP module if present.
c. R(TP35), G(TP36) and B(TP37) signals + TXT blanking supplied by the teletext decoder.

With all these signals colour saturation, brightness and contrast can be controlled. In addition, a beam-current limiter and a cut-off stabilizer are present. The output signals are RGB signals which drive the RGB output amplifiers on the picture tube PC board.

If the voltage at pin 13 of TDA4680 is low, the Y, (R-Y) and (B-Y) signals are passed on to the control amplifiers. A high voltage at pin 13 switches the RGB signals coming from EXT 1 or PIP through to the control amplifiers.
A 2nd switch is controlled with the TXT blanking and switches the TXT signals through if pin 1 of TDA4680 is high.
Transistor 7410 enables a PIP to be written in teletext mode.

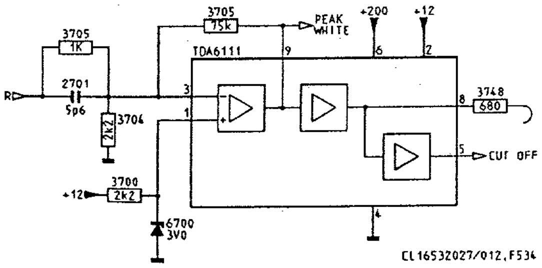

3705 1K
3705 75k
PEAK WHITE
+200
+12
TDA6111
R
2701 5p6
3704 2k2
3700 2k2
+12
6700 3V0
3748 680
CUT OFF
CL 16532027/012.F534

Fig. 5.33

## 5.8 RGB amplifiers (TDA6100)

The heart of the RGB output amplifiers is an integrated power amplifier, the TDA6100. For each colour one IC is used. The circuits for the three colours are identical.

## Peak beam-current limitation

The peak beam-current information is measured limitation via diodes 6701, 6702 and 6703. If the voltage at one of the amplifiers drops below 40V (high beam current), TS7704 will start conducting, causing TS7450 and TS7451 to start conducting also. Consequently, the voltage at pin 16 of TDA4680 decreases and the peak white limiter becomes active. If the voltage on one of the amplifiers drops below approx. 20 V (very high beam current), zener diode 6707 will start conducting also, thus driving TS7704 fully into saturation. The peak white limiter then is driven to full power.

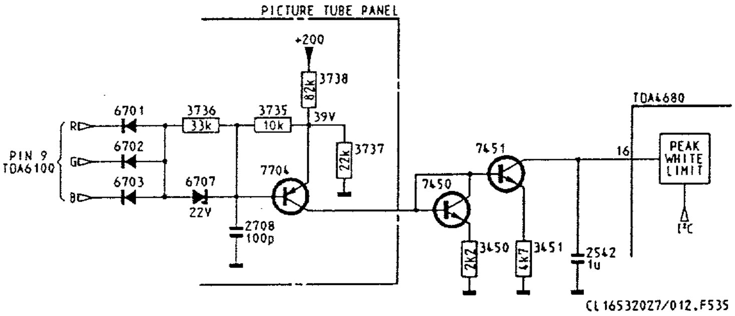

PICTURE TUBE PANEL
+200
3738
82k
39V
6701
3736
33k
3735
10k
3737
22k
PIN 9
TDA6100
R
G
B
6702
6703
6707
22V
7704
2708
100p
7451
7450
3450
2k2
3451
4k7
2542
1u
TDA4680
16
PEAK WHITE LIMIT
I²C
CL 16532027/012.F535

Fig. 5.34

## Stabilization of cut-off points

During frame flyback a number of pulses are generated enabling the TDA4680 to set the cut-off points of the picture tube. The pulses are measured with R3710, R3719, R3753 and R3453 at pin 19 of TDA4680.

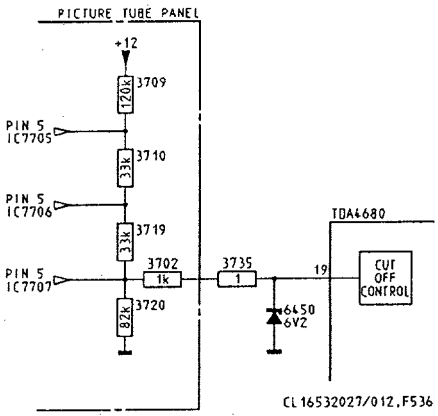

PICTURE TUBE PANEL
+12
3709
120k
PIN 5
IC7705
3710
33k
PIN 5
IC7706
3719
33k
PIN 5
IC7707
3702
1k
3735
1
3720
82k
6450
6V2
TDA4680
19
CUT OFF CONTROL
CL 16532027/012.F536

Fig. 5.35

# 6 Synchronisation and deflection

Contents
6.1 Synchronisation
6.2 The frame output stage
6.3 The line output stage
6.4 DAF

### Block diagram (fig. 6.1)

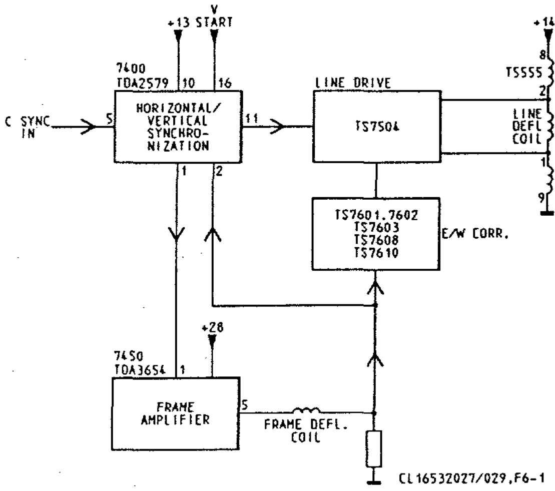

+13
V START
+141
7400
TDA2579
10
16
LINE DRIVE
T5555
8
2
C SYNC IN
5
HORIZONTAL/ VERTICAL SYNCHRONIZATION
11
TS7504
LINE DEFL COIL
1
9
1
2
TS7601.7602
TS7603
TS7608
TS7610
E/W CORR.
+28
7450
TDA3654
1
FRAME AMPLIFIER
5
FRAME DEFL. COIL
CL 16532027/029.F6-1

Fig. 6.1

The whole line and frame synchronisation takes place in IC7400 (TDA2579). The frame output amplifier is built up around IC7450 (TDA3654). The line output stage is built up around T5555 and is controlled via TS7501 and TS7504. The line output stage is powered from the main SOPS (+ 141), while the frame output stage is powered from the line output stage (+ 28).

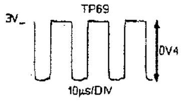
## 6.1 Synchronisation

### IC7400 (TDA2579) (Fig. 6.2)

### Starting up

IC7400 is started up in two phases.
After the set is switched on, the V-start supply voltage (chapter 7) only starts the horizontal oscillator (via pin 16-IC7400). After that the +13 supply voltage powers the other internal circuits via pin 10-IC7400. As a result, the line output stage will start up gradually after switch-on.

### Sync. separator



The sync signal arrives at the sync separator via pin 5-IC7400. The sync separator detects the sync peak level and the black level and stores them in C2402 and C2403, pin 6-IC7400 and pin 7-IC7400 respectively.

### Time constants

| Pin 5 | Pin 18 | time contant |
|---|---|---|
| no signal | < 1V2 | small |
| signal | ± 6V25 | normal |
| good signal | ± 10V | large |

The synchronisation can work with 3 different control speeds depending on the quality and the size of the sync signal supplied to pin 5-IC7400 (TP69).It is possible to determine which time constant is switched on by taking a measurement at pin 18-IC7400.

### Line oscillator

The horizontal oscillator works on the principle of the charging and discharging of C2406 at pin 15-IC7400. R3406 makes the charge and discharge time controllable and thus the oscillator frequency adjustable.The free-running frequency can be set by short-circuiting the CVBS signal on pin 5 to earth and setting the picture stable with R3406.

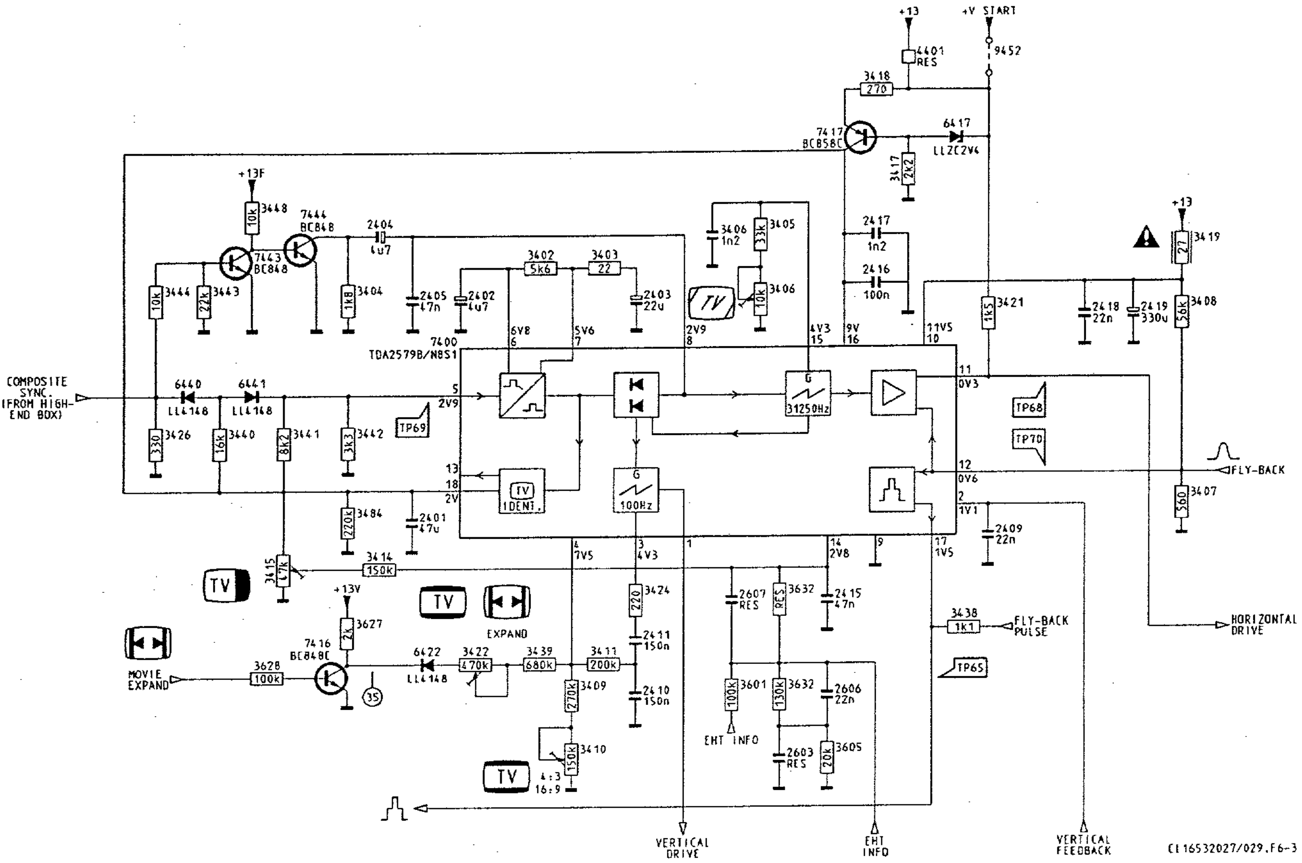
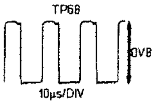
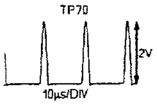

+13
+V START
4401 RES
9452
3418 270
7417 BC858C
6417 LLZC2V4
3417 2k2
2417 1n2
2416 100n
+13F
3448 10k
7444 BC848
2404 4u7
7443 BC848
3444 10k
3443 22k
3404 1k8
2405 47n
2402 4u7
3402 5k6
3403 22
2403 22u
3406 1n2
3405 33k
3406 10k
TV
7400 TDA2579B/N8S1
6V8 6
5V6 7
2V9 8
4V3 15
9V 16
11V5 10
3421 1k5
2418 22n
2419 330u
3408 56k
+13
3419 27
COMPOSITE SYNC. (FROM HIGH-END BOX)
6440 LL4148
6441 LL4148
5 2V9
3426 330
3440 16k
3441 8k2
3442 3k3
TP69
13
18 2V
TV IDENT.
G 100Hz
G 31250Hz
11 0V3
TP68
TP70
12 0V6
FLY-BACK
2 1V1
2409 22n
3407 560
3484 270k
2401 47u
4 7V5
3 4V3
1
14 2V8
9
17 1V5
3414 150k
3415 47k
TV
+13V
3627 2k
7416 BC848C
3628 100k
MOVIE EXPAND
TV
EXPAND
6422 LL4148
3422 470k
3439 680k
3411 200k
3424 220
2411 150n
2410 150n
3409 270k
3410 150k
TV
4:3 16:9
2607 RES
3632 RES
2415 47n
3438 1k1
FLY-BACK PULSE
HORIZONTAL DRIVE
TP65
3601 100k
3632 130k
2606 22n
EHT INFO
2603 RES
3605 20k
35
VERTICAL DRIVE
EHT INFO
VERTICAL FEEDBACK
CL 16532027/029.F6-3

Fig. 6.2

## ne output



## ıase discriminator



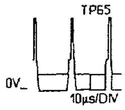
The oscillator signal of the horizontal oscillator goes via the line pulse phase comparator to the output pin 11-IC7400 for control of the line output stage.
By varying the control voltage for the phase detector with R3415 (pin 14-IC7400), the moment of the flyback can be adjusted.
In this way the picture can be centred horizontally with R3415. However, because this control affects the linearity, the second control is added in the deflection circuit. Together with these two controllers, the horizontal centring can be adjusted and the linearity remains good.

The line output stage forms a flyback pulse, which is sent via pin 12-IC7400 to the phase discriminator. The latter uses this pulse to adjust the phase of the outgoing line pulses.

## Vertical

In this way,
and then R3
should be ac

## Sandcas



## Burn-in |

## Field bla

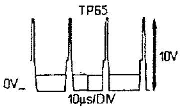
## Vertical synchronisation

In this way, first R3410 (in 16:9 mode) and then R3422 (in expand mode) should be adjusted.

The vertical synchronisation is obtained from the horizontal synchronisation.With the components between pin 4 and pin 3-IC7400 the shape of the saw-tooth control voltage is determined for the frame output stage.

The picture height can be set using potentiometers R3410 and R3422. R3410 is used for the setting in normal 16:9 and 4:3 operation. In film format (movie expand) operation D6422 starts to conduct and the picture height can be set using R3422.

## Sandcastle generator



The sandcastle pulse is at pin 17-IC7400. This output signal has three levels:

1: 11V burst-key
2: 4.5V line blanking
3: 2.5V frame-blanking

## Burn-in protection

If the voltage fed back from the frame deflection (pin 2-IC7400) on this is greater than 1.9V or less than 0.5V, the sandcastle generator will increase the output (pin 17-IC7400) to a minimum of 2.5V.(Field blanking)

## Field blanking

The raster blanking for PIP is generated by the high-end box. For the video controller the sandcastle is used for this. With film format (movie-expand) reproduction in FL1.2, however, writing would be both at the top and at the bottom in the picture tube. Thus in movie-expand mode an extra raster blanking is generated by the high-end box (VBI. 16:9), which is added to the sandcastle via IC7800.

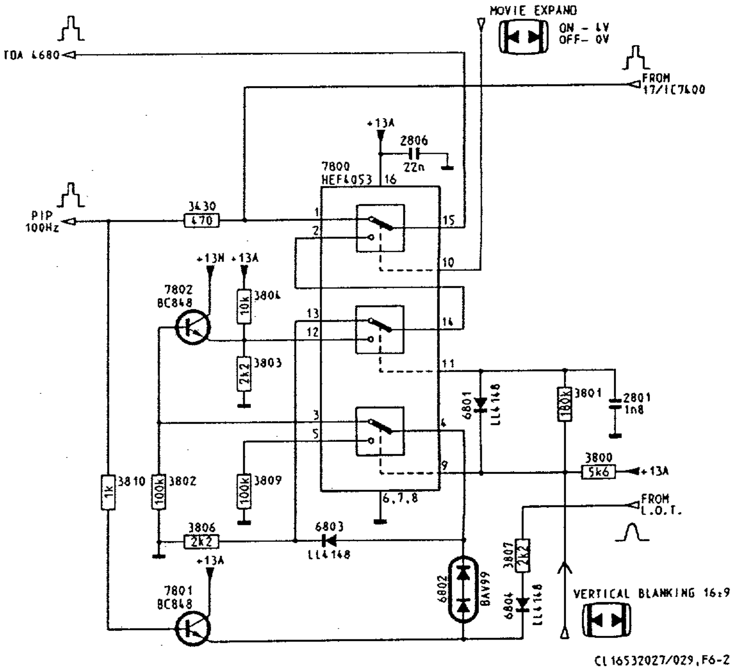
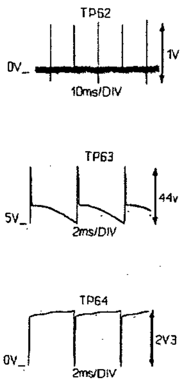

MOVIE EXPAND
ON - 4V
OFF- 0V
TDA 4680
FROM 17/IC7400
+13A
2806
22n
7800
HEF4053
16
PIP 100Hz
3430
470
1
2
15
10
+13N
+13A
7802
BC848
10k
3804
13
12
14
2k2
3803
11
6801
LL4148
180k
3801
2801
1n8
3
5
4
9
3800
5k6
+13A
1k
3810
100k
3802
100k
3809
6,7,8
FROM L.O.T.
3806
2k2
6803
LL4148
+13A
3807
2k2
6802
BAV99
6804
LL4148
7801
BC848
VERTICAL BLANKING 16:9
CL 16532027/029.F6-2

Fig. 6.3

# 6.2 The frame output stage (fig. 6.4)



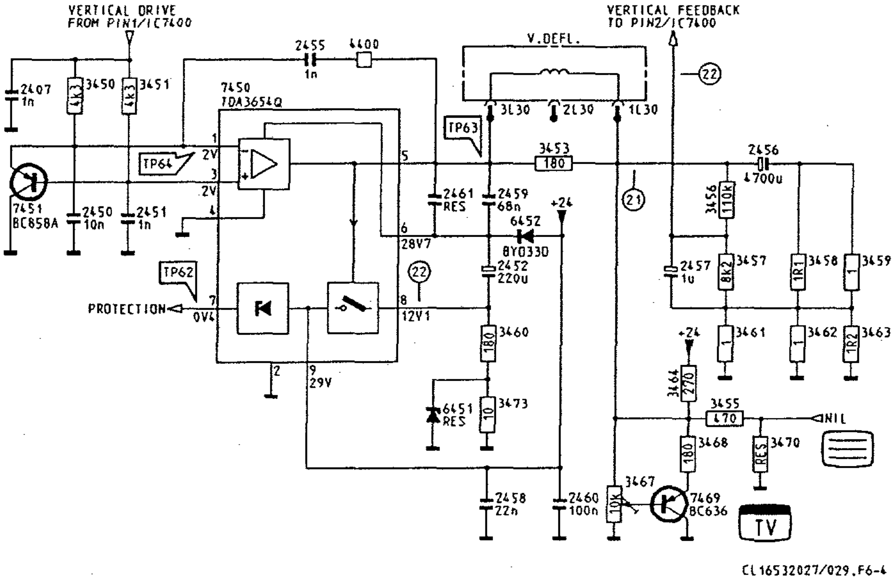

VERTICAL DRIVE FROM PIN1/IC7400
VERTICAL FEEDBACK TO PIN2/IC7400
V.DEFL.
2455 1n
4400
7450 TDA3654Q
2407 1n
3450 4k3
3451 4k3
7451 BC858A
2450 10n
2451 1n
TP64
TP62
TP63
PROTECTION
2V
2V
0V4
28V7
12V1
29V
3L30
2L30
1L30
3453 180
2461 RES
2459 68n
+24
6452 BYD33D
2452 220u
3460 180
6451 RES
3473 10
2458 22n
2460 100n
3467 10k
7469 BC636
2456 4700u
3456 110k
2457 1u
3457 8k2
3458 1R1
3459
3461 1
3462 1
3463 1R2
3464 270
3455 470
3468 180
3470 RES
NIL
TV
21
22
CL 16532027/029.F6-4

Fig. 6.4

The frame deflection is built up around two IC's:
-IC7400 (TDA2579) which contains the frame oscillator and the differential amplifier.
-IC7450 (TDA3654) the frame output amplifier.
Because the deflection coil forms a self-induction which resists any current change, the current through the deflection will not follow the shape of the connected voltage.
The current is therefore converted into a voltage over R3461/R3462/R3463 and returned via R3457/R3474/C2457 to pin 2-IC7400. There the shape of the voltage is compared with the shape of the control voltage at pin 3-IC7400.

## Flyback generator

The frame output amplifier IC7450 is powered via pin 6 from the +28 supply voltage. This voltage is too low for a fast flyback. Therefore a flyback generator has been mounted around C2452. This generator is charged to 22 V during scan and to ± 50V during flyback. TS7451 takes care of a fast discharge of C2450 and thus for a steep side during frame flyback.

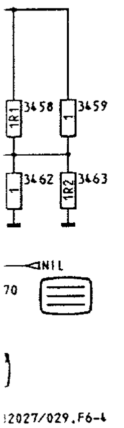
## Picture height

The picture height can be influenced by sending an extra direct current through resistors R3461/R3462/R3463, which measure the saw-tooth shaped current through the deflection coil and feed it back to pin 2-IC7400. This direct current is adjustable with R3467.
The picture height can be set with R3467.

## Protection

If, because of a defect in the frame deflection, the voltage at pin 8-IC7450 drops below 1.5V, pin 7-IC7450 (TP62) will increase its voltage from 0.4V to 4.5V. This voltage will switch off the SOPS supply.
TS7480 prevents the protection from being activated erroneously during switching-on.
The voltage +5 from the line transformer at the moment of start-up will in fact not be present immediately, which causes TS7480 to conduct.

. 6.4)


3458
1R1
3459
1
3462
1
3463
1R2
NIL
70
12027/029.F6-4

lator and

hich
deflection

er
4/C2457
ompared
0.

in 6 from
r a fast
unted
uring
are of a
uring

extra
3, which
deflection
urrent is

oltage at
2) will
e will

d

ment of
ch causes

## 6.3 The line output stage

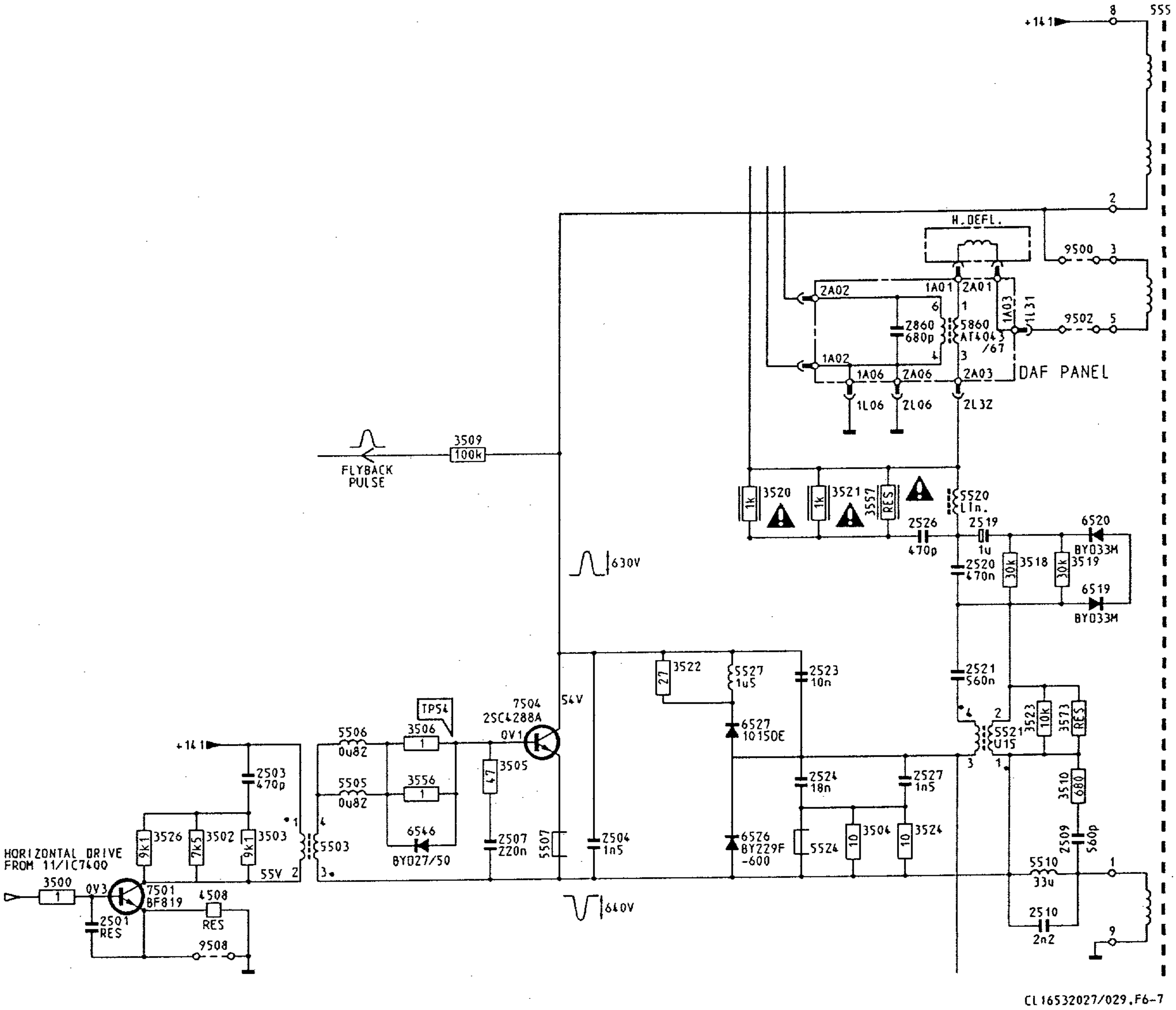
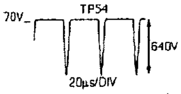

+141
8
555
2
H.DEFL.
9500
3
9502
5
2A02
1A01
2A01
6
1
2860
680p
5860
AT4043
/67
1A03
1L31
4
3
1A02
1A06
2A06
2A03
DAF PANEL
1L06
2L06
2L32
FLYBACK
PULSE
3509
100k
630V
3520
1k
3521
1k
3557
RES
5520
Lin.
2526
470p
2519
1u
6520
BY033M
2520
470n
3518
30k
3519
30k
6519
BY033M
3522
27
5527
1u5
2523
10n
2521
560n
TP54
7504
2SC4288A
54V
0V1
+141
5506
0u82
3506
1
2503
470p
3505
47
5505
0u82
3556
1
6527
1015OE
5521
U15
3523
10k
3573
RES
3526
9k1
3502
7k5
3503
9k1
5503
6546
BY027/50
2507
220n
5507
2504
1n5
2524
18n
2527
1n5
3510
680
HORIZONTAL DRIVE
FROM 11/IC7400
55V
3500
1
0V3
7501
BF819
4508
RES
2501
RES
9508
6526
BY229F
-600
5524
3504
10
3524
10
2509
560p
5510
33u
2510
2n2
640V
9
CL 16532027/029.F6-7

Fig. 6.5

The line pulses originating from pin 11 of synchronisation IC7400 are passed on via TS7501 and T5503 to switching transistor 7504 (Fig 6.5). The deflection circuit consists of line deflection coil 5627, switching transistor TS7504, flyback capacitor 2504 and capacitor 2520.

The power for the line output circuit is applied symmetricall via turns 8-2 and 1-9. This has the advantage that not one but two flyback pulses are formed, which are half the size and opposite to each other. Consequently, the amount of L interference dissipated is reduced. The control signal is not affected by this because it is applied via an electrolytic separation (T5503).

The flyback generator is consists of D6522, D6525 and T5521.



## Corrections

The following correcting circuits have been incorporated in series with the deflection coil:

**S-correction**

The value of C2520 has been chosen such that the voltage across the deflection coil varies to keep the speed of the electron beam across the screen practically constant.

**Linearity**
Coil 5520 is a premagnetized coil taking care that the voltage across the deflection coil does not progress exponentially during scan.

**Other corrections**
-The circuit consisting of S5510 and R3510 prevents the line transformer from decaying.
-The circuit consisting of C2519, R3518, R3519 and D6519, which is mounted parallel across C2520, is intended to prevent the decaying as a result of sharp white transitions.

## ast-West correction

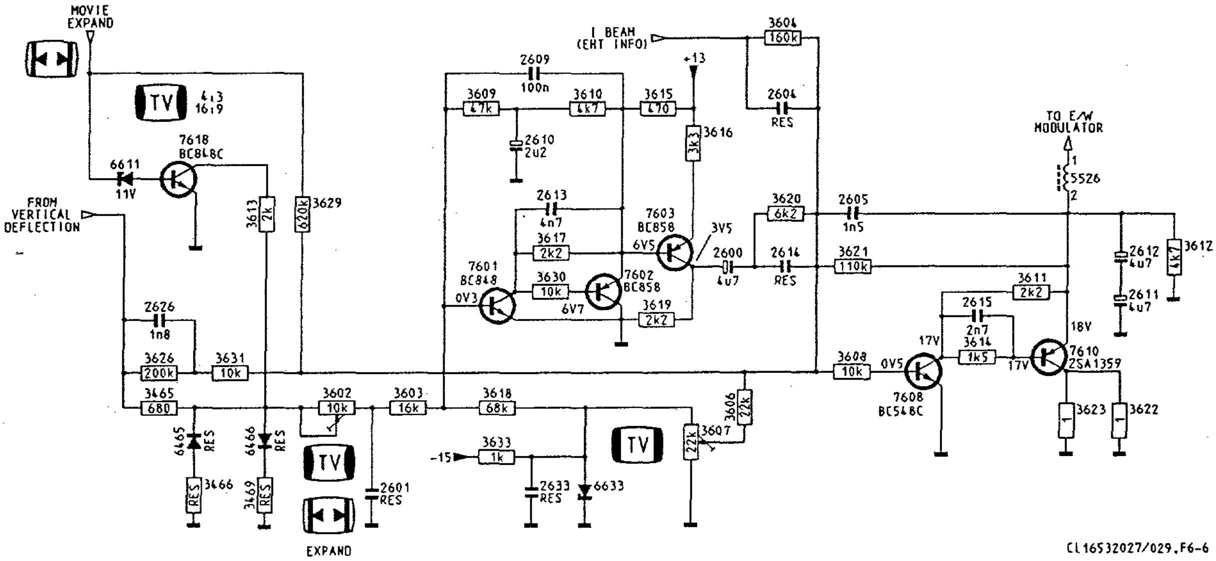

MOVIE EXPAND
TV 4:3 16:9
7618 BC848C
6611 11V
FROM VERTICAL DEFLECTION
3613 2k
620k 3629
2626 1n8
3626 200k
3631 10k
3465 680
6465 RES
3466 RES
6466 RES
3469 RES
3602 10k
TV
EXPAND
3603 16k
2601 RES
I BEAM (EHT INFO)
2609 100n
3609 47k
3610 4k7
3615 470
+13
3616 3k3
2610 2u2
2613 4n7
3617 2k2
7603 BC858
6V5
3V5
7601 BC848
0V3
3630 10k
7602 BC858
6V7
3619 2k2
2600 4u7
3618 68k
3633 1k
-15
2633 RES
6633
TV
3606 22k
3607 22k
3604 160k
2604 RES
3620 6k2
2605 1n5
2614 RES
3621 110k
TO E/W MODULATOR
1
5526
2
2612 4u7
2611 4u7
4k7 3612
3611 2k2
2615 2n7
3614 1k5
17V
18V
17V
3608 10k
0V5
7608 BC548C
7610 2SA1359
3623 1
3622 1
CL16532027/029.F6-6

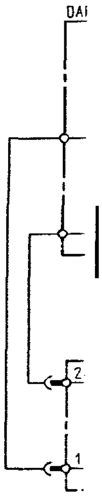
Fig. 6.6

For the East-West demodulator the flyback circuit has been divided into two parts. Both circuits are tuned to the same frequency (so they have the same flyback time). It is the intention that the supply voltage across the deflection circuit is modulated with a frame frequency, parabolic voltage.
This voltage is made from the vertical saw-tooth voltage by a double integrator (Fig 6.6) that is built up around TS7601, TS7602 and TS7603. In movie-expand mode the amount of East/West correction can be set with R3602. In normal 16:9 or 4:3 mode TS7618 starts to conduct and the correction is modified by R3629.
To prevent the picture width from varying along with the beam current, the east-west modulator is also supplied with the beam current information.
Potentiometer 3607 varies the DC-adjustment and thus the picture width.

---

**Horizon**

**Output**



## Horizontal shift

To shift the picture horizontally, a positive or negative current can be sent through the deflection coil with the aid of the circuit in Fig. 6.7.

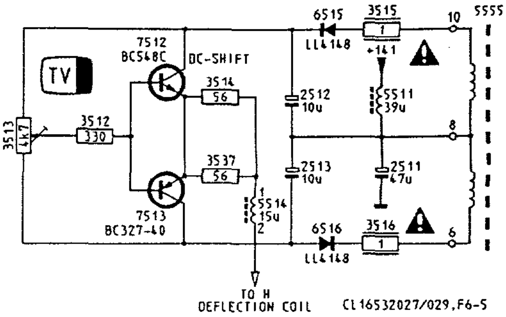

6515
LL4148
3515
1
10
5555
+141
7512
BC548C
DC-SHIFT
TV
3514
56
2512
10u
5511
39u
3513
4K7
3512
330
8
3537
56
2513
10u
2511
47u
5514
15u
7513
BC327-40
6516
3516
1
6
LL4148
TO H
DEFLECTION COIL
CL16532027/029.F6-5

Fig. 6.7

## Output voltages

The line output transformer delivers the following voltages:

- EHT, Focus and VG2
- Beam current information (EHT info)
- Heater voltage for the picture tube
- The +5, +28, -10 (-Vn) and +200 supply voltages.

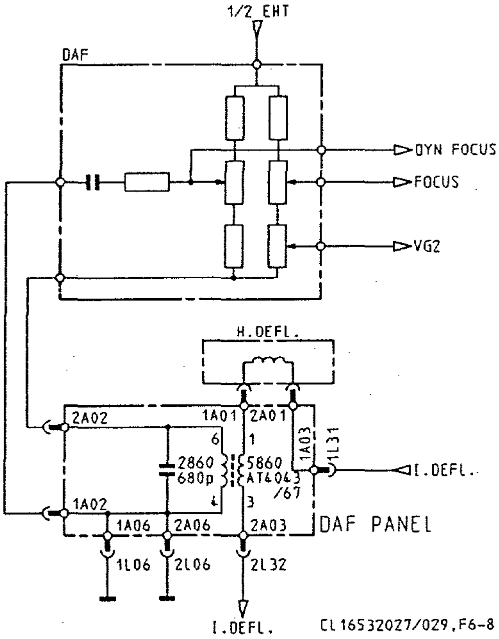

1/2 EHT
DAF
DYN FOCUS
FOCUS
VG2
H.DEFL.
2A02
1A01
2A01
1A03
1L31
2860
680p
5860
AT4043
/67
I.DEFL.
1A02
1A06
2A06
2A03
DAF PANEL
1L06
2L06
2L32
I.DEFL.
CL16532027/029.F6-8

Fig. 6.8

## 6.4 DAF (Dynamic Astigmatic Focus)

Because of the large width of a FL1.2 television receiver, the distance from the electron gun in the tube to the sides of the screen is much greater than to the centre. Thus, the picture will normally not be in focus over the whole picture width. The Dynamic Astigmatic Focus unit has been added to solve this problem. The primary winding of transformer T5860 on the DAF panel is in series with the horizontal deflection coil. A sawtooth line frequency voltage now forms on the secondary winding. Together with C2860, the secondary winding forms a double integrator which converts this sawtooth voltage into a parabolic voltage. This is taken to the Focus/VG2 splitter.
The Focus/VG2 splitter is powered by the half high voltage. The VG2 and the focusing voltage are obtained from this. The focusing voltage is now modulated with the line frequency parabolic voltage formed on the DAF panel. Consequently, the focusing voltage will be different at the sides of the picture, and thus the picture is focused over the whole width.

# 7 Power supply

Contents

7.1 The main supply
7.2 The auxiliary supply (micro SOPS)

The FL1.0 sets are equipped with 2 supply circuits, namely a main supply and an auxiliary supply (stand-by supply).

## 7.1 The main supply

This supply is of the SOPS type (Fig. 7.1). A characteristic feature of the FL1.0 main supply is that the entire driver circuit (with the exception of the stand-by and protection parts) is located on a separate SOPS control PC board. This power supply delivers the +141, +16 and -16 (for the sound output stage) and the +13 supply voltages.

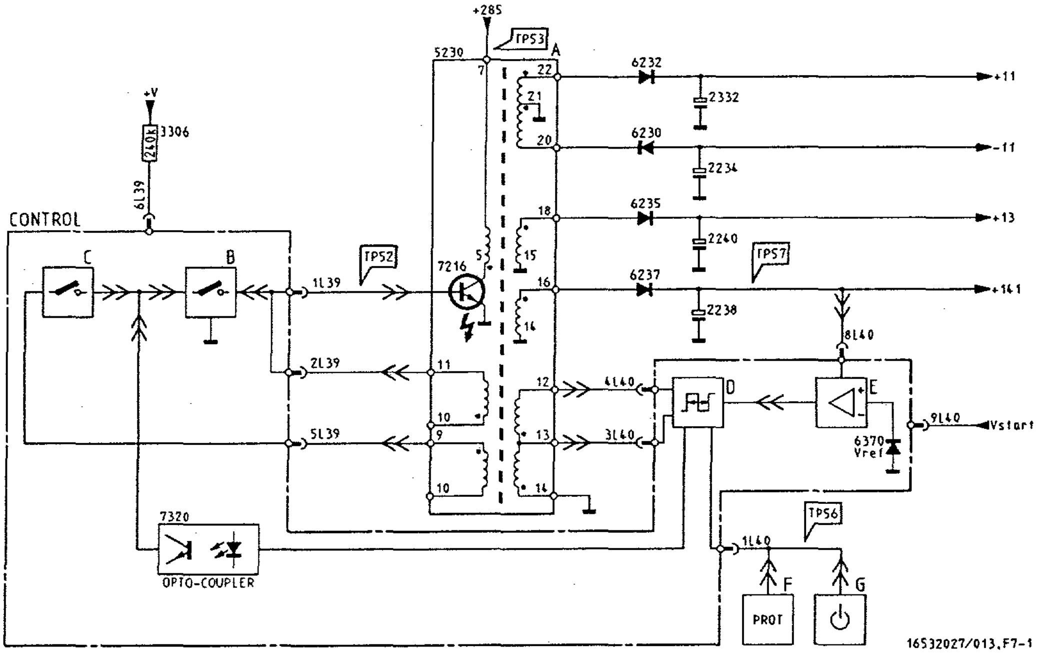
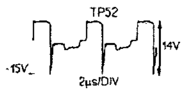
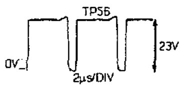
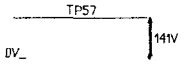

+285
TP53
5230
A
7
22
21
20
18
15
16
14
12
13
14
11
10
9
10
6232
2332
+11
6230
2234
-11
6235
2240
+13
TP57
6237
2238
+141
8L40
+V
3306
240k
6L39
CONTROL
C
B
TP52
1L39
7216
2L39
5L39
4L40
3L40
D
E
9L40
Vstart
6370
Vref
7320
OPTO-COUPLER
TP56
1L40
F
G
PROT
16532027/013.F7-1

Fig. 7.1

### Working







The mains voltage is rectified on the primary side (TP53). The power supply is started up via resistor R3306. The rectified voltage is fed to switching transistor 7216, which is driven by the circuit on the control PCB (TP52).

The control PCB accommodates both the primary and the secondary part of the control circuit. The stand-by circuit (G) and the protective circuit (F) are not located on the control PCB.

The primary control circuit, consisting of the switch-off circuit (B) and the blocking circuit (C), is driven by the secondary part (via an optocoupler) and by turns 9-10-11.

The secondary part contains a pulse width modulator (D), which is driven by turns 12-13-14 and by a voltage comparator (E). The latter adjusts the pulse width modulator with 141-volt voltage that is presented via pin 8L40.

namely a
).

teristic
iver
:tion
d. This
he sound

—►+11

—►-11

—►+13

—►+141

◄Vstart

27/013.F7-1

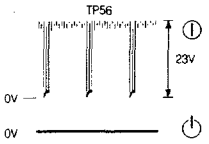
53). The
:ctified
driven

l the
rcuit (G)
ontrol

off
e
)-11.
(D),

dulator

## Stand-by



The power supply can be turned off via pin 1L40 (TP56). This takes place if the voltage at this pin drops below +/- 1 Volt (fig. 7.2).

In stand-by mode the control microcomputer generates a low level at the base of TS7385. Via TS7384 pin 1 of connector L40 is now connected to 0 V.

The main supply is now completely turned off and all output voltages are 0 Volts.

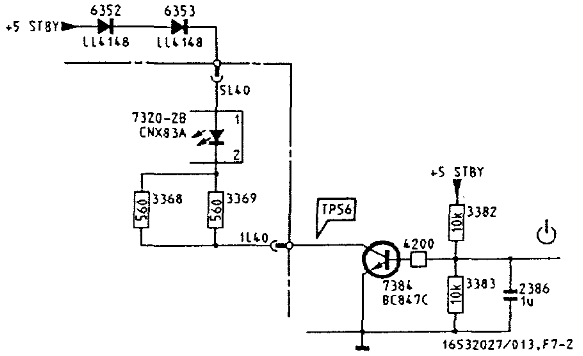
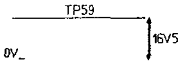

+5 STBY
6352
LL4148
6353
LL4148
5L40
7320-2B
CNX83A
1
2
3368
560
3369
560
1L40
TP56
+5 STBY
3382
10k
4200
7384
BC847C
3383
10k
2386
1u
16532027/013.F7-2

Fig. 7.2

## Starting-up

The power supply can be adjusted back via pin 9L40; if the voltage at this pin is lower than 7 volts, the output voltages of the SOPS will be low, but the SOPS stays operational. For a good start-up of the line output stage when the set is switched on, first the auxiliary supply and then the main supply should be started. Therefore the +V start supply voltage of the auxiliary supply is fed to pin 9L40 of the control PCB. As long as this voltage is not available, the output voltages of the main supply stay low.

## +13 Volt



Most current for the +13 volts is supplied by resistor R3241 (Fig. 7.3).

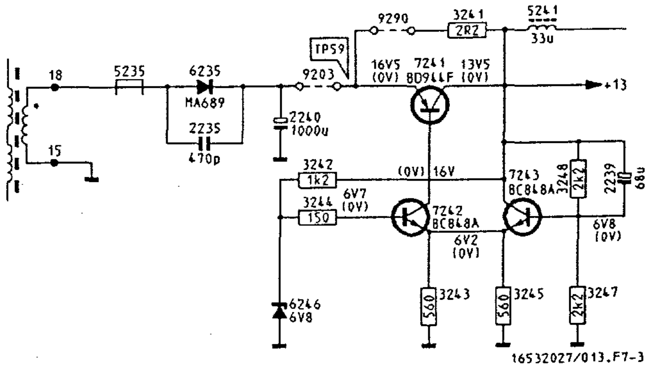
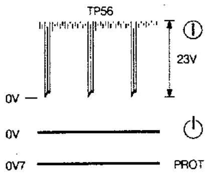

9290
3241
2R2
5241
33u
TP59
18
5235
6235
MA689
2235
470p
9203
16V5
(0V)
7241
BD944F
13V5
(0V)
+13
15
2240
1000u
3242
1k2
3244
150
(0V)
16V
6V7
(0V)
7242
BC848A
6V2
(0V)
7243
BC848A
3248
2k2
2239
68u
6V8
(0V)
6246
6V8
3243
560
3245
560
3247
2k2
16532027/013.F7-3

Fig. 7.3

However, its dimensions are such that during normal operation the output voltage is slightly less than 13 volts. Therefore an extra current is carried via TS7241, which brings the voltage at the required value of 13V. TS7241 is driven by the differential amplifier that is built around TS724[illegible] and TS7243. D6246 delivers the necessary reference voltage.

## Protection

The FL1.0 chassis is equipped with a number of protective circuits. If one of these circuits detects a fault, the main power supply will be switched off.
The protection is driven via the thyristor function that is built up around TS7380 and TS7381 (Fig. 7.4), and is activated by a pulse generated by one of the protective circuits.



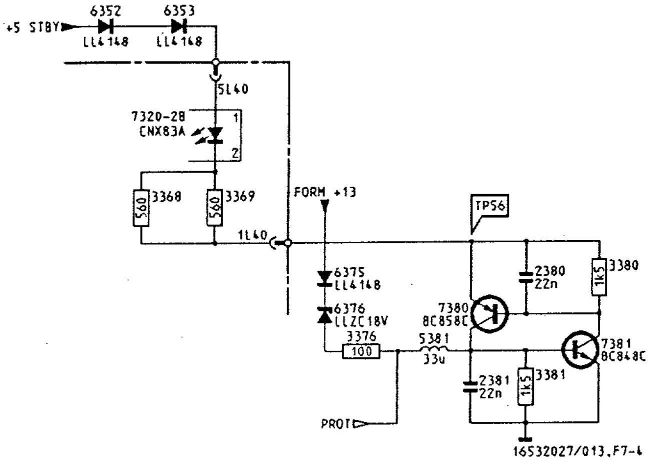
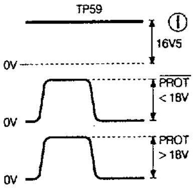

6352
6353
+5 STBY
LL4148
LL4148
5L40
7320-28
CNX83A
1
2
3368
560
3369
560
1L40
FORM +13
TP56
6375
LL4148
6376
LLZC18V
3376
100
7380
BC858C
5381
33u
2380
22n
3380
1k5
7381
BC848C
2381
22n
3381
1k5
PROT
16532027/013.F7-4

Fig. 7.4

If the protection is activated, pin 1L40 (TP56) will be kept low (0,7 volt) so that the main supply is switched off. The thyristor function will keep the power supply switched off, even when the fault is eliminated.

The following circuits are equipped with a protection:

### Main SOPS



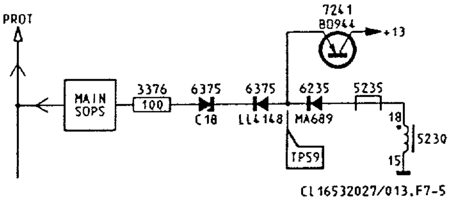
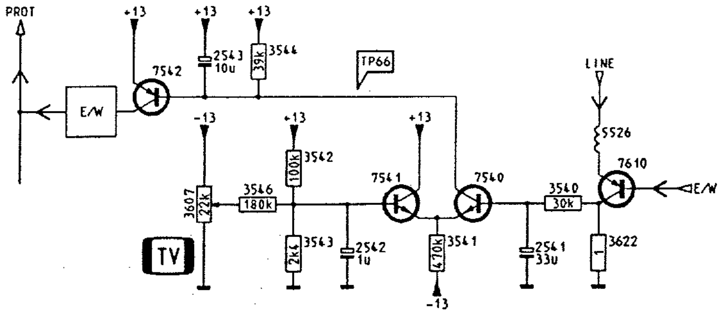

PROT
7241
BD944
+13
MAIN SOPS
3376
100
6375
C18
6375
LL4148
6235
MA689
5235
18
5230
15
TP59
CL16532027/013.F7-5

Fig. 7.5

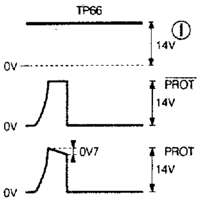
In order to detect a possible overvoltage of the main SOPS the +13 output voltage is checked.
If the output voltage at the cathode of D6235 exceeds +19 volts, zener diode D6376 will start to conduct and activate the protection circuit.

## EW circuit


PROT
+13
+13
+13
2543
10u
3544
39k
7542
E/W
TP66
LINE
5526
7610
E/W
-13
+13
3542
100k
+13
7541
7540
3540
30k
3607
22k
3546
180k
TV
3543
2k4
2542
1u
3541
470k
2541
33u
3622
1
-13

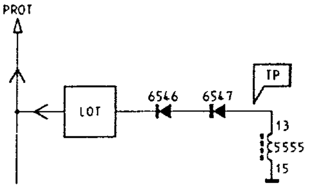
CL 16532027/013.F7-6

Fig. 7.6


TP66
①
14V
0V
$\overline{\text{PROT}}$
14V
0V
0V7
PROT
14V
0V

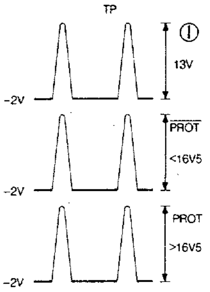
Transistors 7540 and 7541 form a differential amplifier. The base of TS7541 can be set with R3607 (picture width control), whereas the base of TS7540 is driven by the collector of TS7610.
If a fault causes the voltage on the collector of TS7610 to become too high, TS7540 will start to conduct, thus activating the protection circuit via TS7542.

## L.O.T.


PROT
LOT
6546
6547
TP
13
5555
15

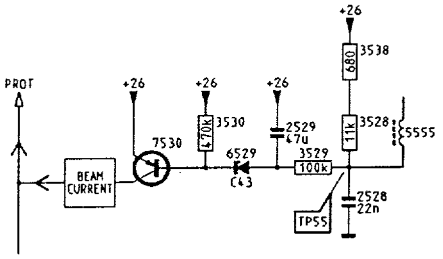
CL 16532027/013.F7-7

Fig. 7.7


TP
①
13V
-2V
$\overline{\text{PROT}}$
<16V5
-2V
PROT
>16V5
-2V

The amplitude of the flyback pulse will increase if the flyback pulse becomes shorter, e.g. because of a fault in the line output stage.
The protection circuit will thus be activated via D6547 and D6546.

## Beam current

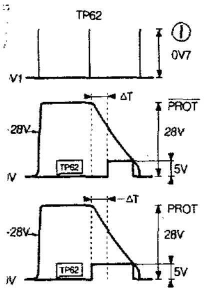

PROT
+26
+26
+26
+26
3538
680
3530
470k
2529
47u
3528
11k
5555
7530
6529
C43
3529
100k
BEAM CURRENT
TP55
2528
22n

CL 16532027/013.F7-8

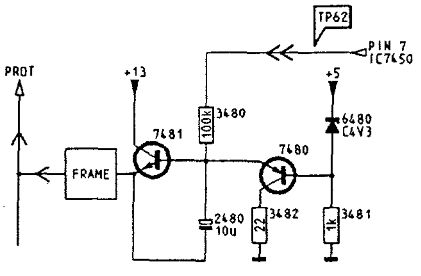
Fig. 7.8

● $\overline{\text{PROT}}$
✹ PROT

If the beam current becomes too high, the voltage across C2528 will drop, thus causing D6529 to zener and the protection circuit to be activated via TS7530.



## Frame deflection

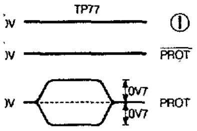

TP62
PIN 7
IC7450
PROT
+13
+5
3480
100k
6480
C4V3
7481
7480
FRAME
2480
10u
3482
22
3481
1k

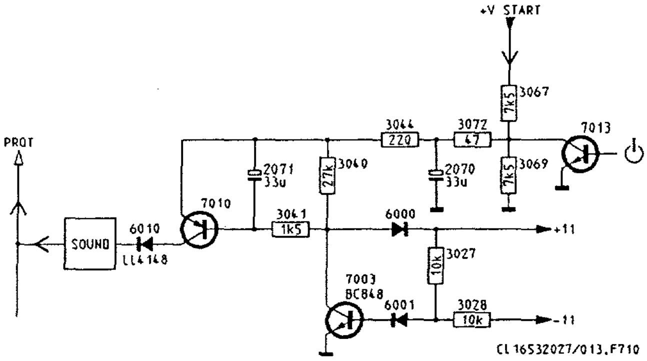
CL16532027/013.F7-9

Fig. 7.9

At normal operation of the frame output stage pin 7-IC7450 is low, so that TS7481 blocks current.
If the frame deflection drops out, 7-IC7450 will go high, so that TS7481 starts to conduct and the protection is switched on.
At switch-off of the set, 7-IC7450 goes high. If the set is switched on and off very quickly, C2480 cannot discharge fast enough so that the protection becomes effective.
To avoid this, TS7480 has been added.
At switch-off, the +5 supply voltage drops out quickly, so that TS7480 starts to conduct and C2480 is discharged via this transistor.

## Sound output stage




+V START
3067
7k5
3044
220
3072
47
7013
PROT
2071
33u
3040
27k
2070
33u
3069
7k5
7010
3041
1k5
6000
+11
SOUND
6010
LL4148
3027
10k
7003
BC848
6001
3028
10k
-11

CL16532027/013.F710

Fig. 7.10

Voltage division of the +16 and -16 results in a voltage of 0V at the junction of R3029 and R3007.
If the voltage at this junction exceeds 3,3V (D6002) + 0,6V (D6001) + 0,6V (be-TS7003) = 4,5V, TS7003 will start to conduct and the protection circuit will become effective via TS7010 and D6010.
If the voltage at the junction is less than -1.2V, TS7010 will also start to conduct.
If the +16 and the -16 are short-circuited with each other, TS7010 will be driven into conduction via D6000.
If the unit is set to standby, TS7013 will start to conduct, which means that no protection can be activated.

If, moreover, the average voltage supplied to one of the loudspeakers is not 0V, TS7003 or TS7004 will also be driven into conduction.

## Fault detection

By fixing a measuring pin to a test point in one of the protected circuits, and then switching on the set, it can be checked whether that circuit activated the protective circuit.

# 7.2 The auxiliary supply (micro SOPS)

This power supply remains active when the set is in stand-by mode.

## Block diagram

Primary
- blocking oscillator A
- switch-off circuit B
- switch-off accelerator F

Secondary
- variable load C
- voltage stabiliser D
- switch-on pulse generator E

The auxiliary supply is built up of 6 blocks:(Fig. 7.11)

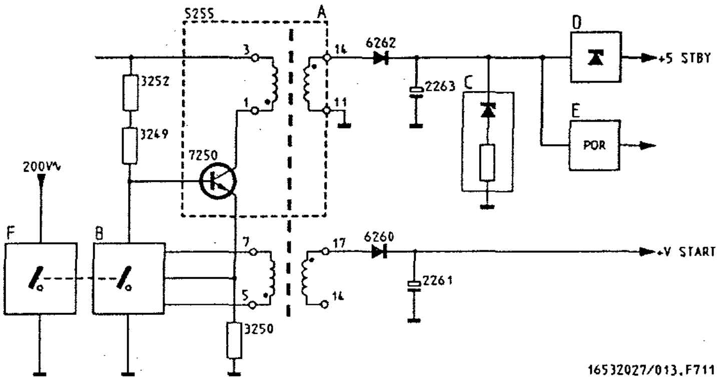
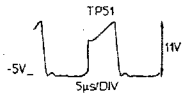

5255
A
3
1
14
11
6262
2263
C
D
+5 STBY
E
POR
3252
3249
7250
200V
F
B
7
5
17
6260
+V START
2261
14
3250
16532027/013.F711

Fig. 7.11

## Primary

Blocking oscillator
Transistor TS7250 receives it base voltage via R3252 and R3249 and starts conducting.
A linearly increasing current then starts flowing through winding 3-1 of T5255, TS7250 and R3250.



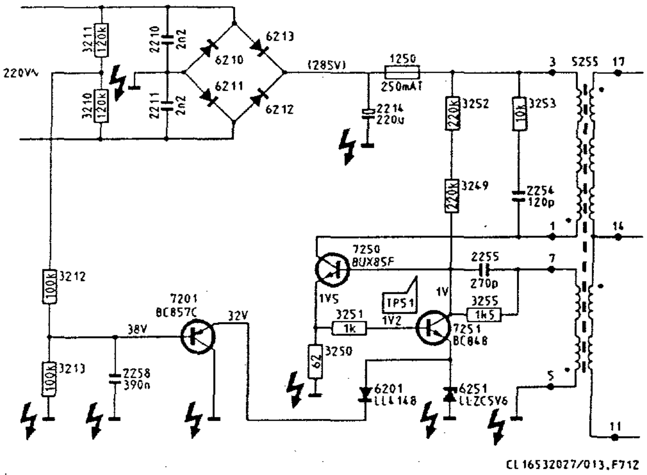

3211 120k
3210 120k
2210 2n2
2211 2n2
220V
6213
6210
6211
6212
(285V)
1250
250mAT
2214 220µ
3252 220k
3253 10k
3249 220k
2254 120p
3
5255
17
1
14
7250 BUX85F
2255
270p
7
3255 1k5
1V
1V5
3251 1k
TP51
1V2
7251 BC848
3250 62
3212 100k
3213 100k
7201 BC857C
38V
32V
2258 390n
6201 LL4148
6251 LLZC5V6
5
11
CL 16532027/013.F712

Fig. 7.12

## Switch-off circuit

If the current increases, the voltage across R3250 increases as well. If this voltage exceeds the emitter voltage of TS7251, TS7251 will start conducting and TS7250 will be switched off. As the emitter voltage of TS7251 has been set at 5.6 V by D6251, the voltage across R3250 at that moment will be 6.2 Volts and the current approx. 90 mA. The polarity of the magnetic field in the transformer then is reversed and the voltage across winding 5-7 becomes negative. Transistor TS7250 is kept out of conduction via R3255/C2254 until all energy on the secondary side has been dissipated. Capacitor C2254 now constitutes an oscillator circuit with winding 3-1, so that an oscillation is formed. The polarity of the voltage across winding 7-5 is reversed via the magnetic coupling, thus causing a current to be delivered to the base of TS7250. This transistor starts conducting and the cycle above is repeated.

## Switching off

The mains AC voltage is fed via R3210, R3211 and R3212 to the base of TS7201. If the mains voltage drops out (at switch-off), TS7201 will start conducting immediately and the voltage across zener diode D6251 will decrease. Consequently, the output voltages of the micro SOPS will decrease at once.

## Secondary

On the secondary side 2 voltages are supplied:

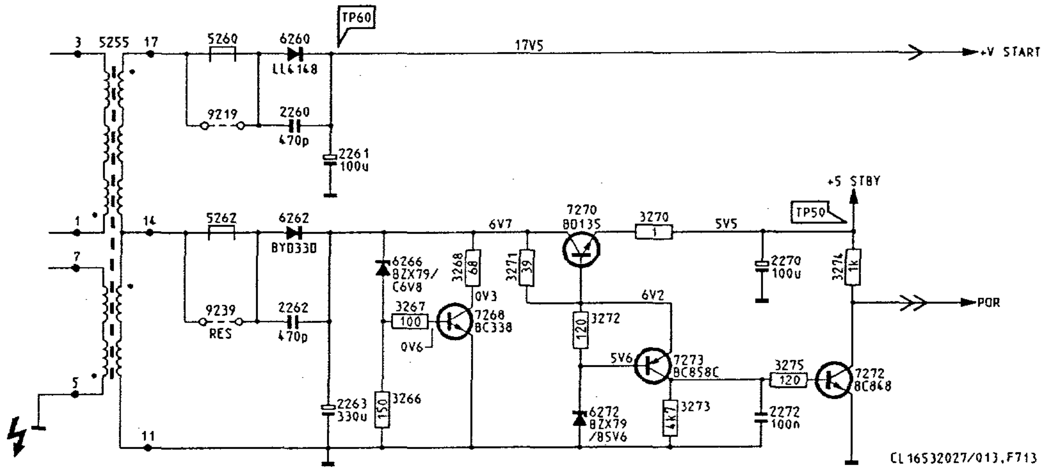
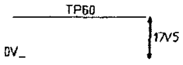

TP60
3
5255
17
5260
6260
LL4148
17V5
+V START
9219
2260
470p
2261
100u
+5 STBY
1
14
5262
6262
BYD330
6V7
7270
BD135
3270
1
5V5
TP50
7
6266
BZX79/
C6V8
3268
68
3271
39
2270
100u
3274
1k
POR
0V3
6V2
9239
RES
2262
470p
3267
100
0V6
7268
BC338
3272
120
5V6
7273
BC858C
3275
120
7272
BC848
5
2263
330u
3266
150
6272
BZX79
/B5V6
3273
4K7
2272
100n
11
CL 16532027/013.F713

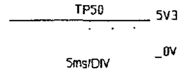
Fig. 7.13

## + Vstart



At pin 17 the Vstart voltage is supplied via D6260 across C2261. This voltage is used to activate the synchronisation IC and to let the main power supply know that the micro SOPS has been started up and that now the main SOPS may be started up as well.

## + 5 Stand-by



At pin 14 a voltage is supplied via D6262 across C2263 from which the +5-volt stand-by voltage is formed.
The +5-volt standby voltage is stabilised in 2 different ways.

### Variable load

If the voltage across C2263 exceeds 6.9 volts, zener diode D6266 and TS7268 start conducting.
The power supply, then, is loaded extra by R3268, so that the voltage decreases more quickly.

### Stabilisation

Series stabiliser TS7270 stabilises the output voltage at 5v6.

## Switch-on pulse

At switch-on, the voltage across R3272 is lower than 0.7 volts. Transistor TS7273 is not conducting. If the +5-volt stand-by voltage is turned on, the POR signal is kept high via R3274. If the voltage across R3272 increases, TS7273 and thus also TS7272 start conducting and the POR signal is switched to a lower level by TS7272. Meanwhile the power supply has been started and a reset pulse has been supplied to the microcomputer.

# 8. PIP

Contents

8.1 Introduction
8.2 The block diagram
8.3 PIP-tuner en bronkeuze
8.4 PIP chrominance/luminance path
8.5 PIP synchronisation
8.6 The A/D converter
8.7 The PIP processor

## 8.1 Introduction

PIP is the abbreviation for Picture In Picture. This is a second picture, reduced, with limited picture sharpness, projected in the large picture. In order to look at another programme in this small picture, the PIP module may be equipped with an extra tuner (otherwise at least one other external source must be connected).
The source which is made visible in the small picture gives no sound information. The sound information always comes from the large picture.

### PIP dimensions

A choice can be made between two formats of the PIP picture (1/9 or 1/16 of the main picture). Depending on this, the PIP picture contains more or fewer lines.

### PIP framework

There is a frame around the PIP picture. The frame thickness above and below is equal to 4 lines. The frame thickness on the left and right is equal to 0.5μs.

### Picture reduction

Only a limited part of the total video signal supplied is used for the PIP acquisition, namely 264 lines, and 47 μs of each line.
The picture is reduced linearly 3 times (4 times with large 1/16). This picture reduction is obtained by averaging picture lines and picture elements. See also section 8.7.

## 8.2 The block diagram

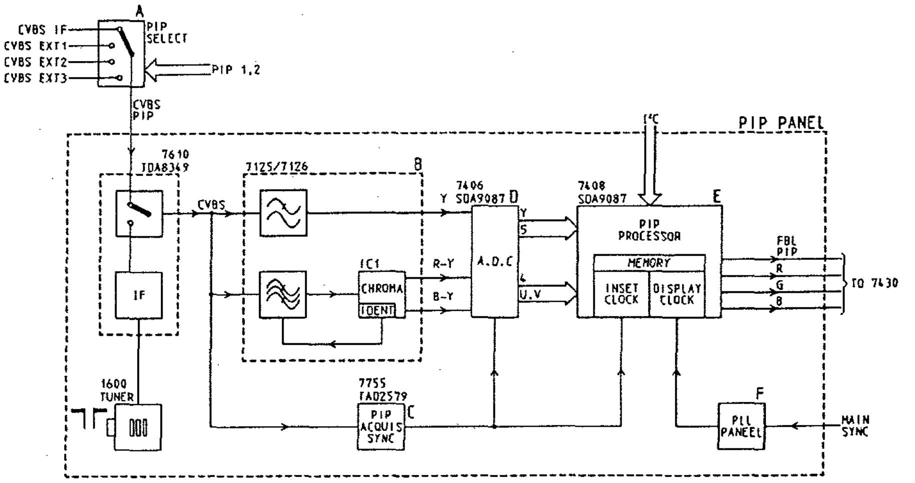
In the PIPSELECT part (A) it is determined which signal is shown in the PIP picture; this part is on the small signal panel

The PIP CVBS signal selected goes to the PIP panel. There is a second (PIP)tuner/intermediate frequency part on this that can be tuned separately to a transmitter. Here the selection also takes place between the signal of the small signal panel and the signal of the PIP tuner.

The CVBS signal is supplied to the luminance-chrominance part (B) and to the synchronisation part (C). The chrominance signal is separated from the luminance signal and then demodulated, after which both the chrominance and the luminance signal are converted from analog to digital in the D/A converter (D).
Depending on the PIP size selected, the digitised signals are then reduced by a factor of 1:16 or 1:9 and stored in the memory of the PIP processor (E).

Because the second signal source is not synchronous with the main signal source, the signal processing described should by synchronous with the main picture. In order to achieve this, a separate synchronisation part (C) is added which supplies signals which are synchronised with the PIP input signal.

The digital Y, U and V signals stored in the memory are read out and converted to R, G and B signals. In order to obtain a stable PIP picture within the main picture, this must be read out synchronised with the synchronisation signals of the main picture. This synchronisation is obtained by controlling the PLL (F), which activates the read-out clock, with the horizontal synchronisation signal of the main picture.
A PIP fast-blanking signal (FBL PIP) is also controlled by the R, G, B signals if a signal is present from the PIP processor which produces switching between EXT RGB (from EXT1) and PIP RGB.
The RGB output signals, coming from the PIP module, are supplied to the IC7309 (see section 5.5).


A
CVBS IF
CVBS EXT1
CVBS EXT2
CVBS EXT3
PIP SELECT
PIP 1,2
CVBS PIP
I²C
PIP PANEL
7610 TDA8349
IF
1600 TUNER
CVBS
7125/7126
B
IC1
CHROMA
IDENT
Y
R-Y
B-Y
7406 SDA9087
D
A.D.C
Y
S
U.V
7408 SDA9087
E
PIP PROCESSOR
MEMORY
INSET CLOCK
DISPLAY CLOCK
FBL PIP
R
G
B
TO 7430
7755 TAD2579
C
PIP ACQUIS SYNC
F
PLL PANEEL
MAIN SYNC

CL 16532027/025.F8-1

Fig. 8.1

# 8.3 PIP tuner and source selection

The PIP tuner part consists of tuner UV916, intermediate frequency and demodulation IC TDA8349 and control IC SAA1300.

### The tuner

The tuner can receive channels on the VHF1, VHF3, UHF, S and the Hyperband. Internally the tuner is divided over three bands (low band, mid band and high band).
The band selection and tuning frequency required are passed to the channel selector by the control system via the I²C bus (pins 13 and 14). The channel selector contains a PLL circuit (Phase Locked Loop) which carries out the tuning. The tuner AGC (Automatic Amplifier Control) is controlled at pin 5. The intermediate frequency signal is available at pins 16 and 17.

### The IF circuit

The IF signal of the tuner part goes via intermediate frequency filter 1610 to pins 1 and 2 of the intermediate frequency IC7610 (TDA8349). Here the signal first comes to the AGC (Automatic Amplification Control). The AGC controls the signal at the correct level, if necessary with the tuner AGC via pin 4. The video demodulator then demodulates the IF video spectrum at 38.9 MHz with the reference circuit at pins 15 and 16. The required system can be selected via pin 20. The CVBS signal generated in this way is supplied directly to output pin 11. The signal then goes to pin 12. This is one of the inputs of a selector switch. The CVBS signal selected on the small signal panel is supplied to the other input. One of these signals is selected via pin 7. The signal selected is sent for further PIP processing.

### The control

IC7630 (SAA1300) contains an I²C control circuit that controls two outputs in this application:

Pin 3 This controls the system selection in IC7610.
This is done with two levels:
OV PAL/SECAM BG, NTSC M
5V SECAM L

pin 4 This controls the selector switch.
OV CVBS of the PIP tuner
12V CVBS of the small signal panel

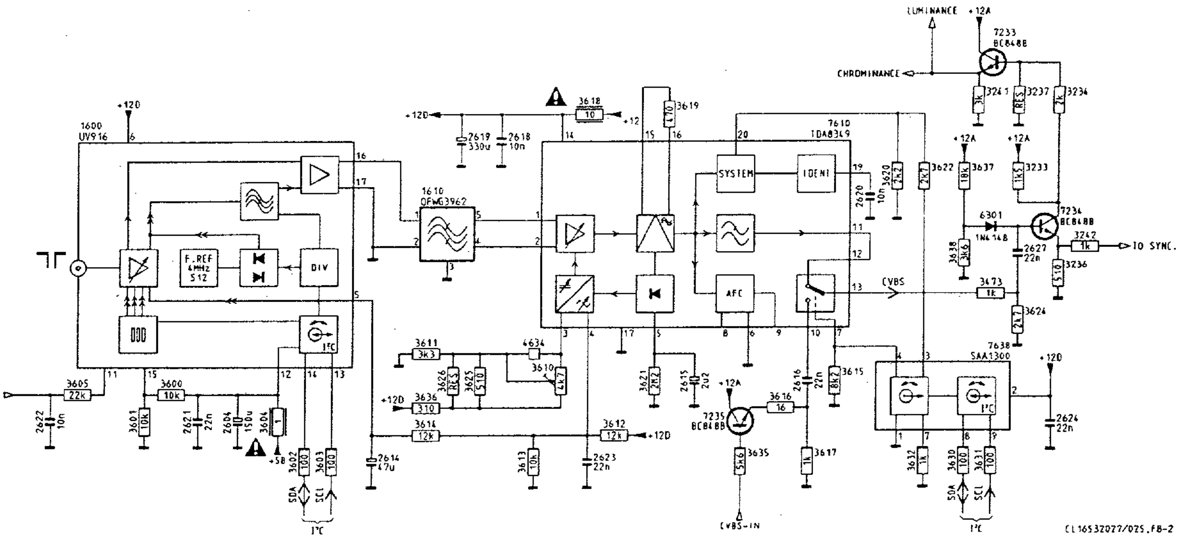

1600
UV916
+12D
F.REF
4MHz
512
DIV
I²C
1610
OFWG3962
3605 22k
2622 10n
3601 10k
3600 10k
2621 22n
2604 150u
3604
+5B
3602 100
3603 100
SDA
SCL
I²C
+12D
2619 330u
2618 10n
3618 10
+12
3619 470
7610
TDA8349
SYSTEM
IDENT
AFC
CVBS
3611 3k3
4634
3610 4k7
3626 RES
3625 510
3636 310
3614 12k
2614 47u
3613 10k
2623 22n
3612 12k
3621 2K2
2615 2u2
+12A
7235 BC848B
3616 16
3635 5k6
CVBS-IN
2616 22n
3617 1k
3615 8k2
2620 10n
3620 2k2
3622 2k7
LUMINANCE
+12A
7233 BC848B
CHROMINANCE
3241 3k
3237 RES
3234 2k
3637 18k
3233 1k5
6301 1N4148
7234 BC848B
3638 3k6
2627 22n
3242 1k
TO SYNC.
3236 510
3473 1k
3624 2k7
7638
SAA1300
+12D
2624 22n
3632 1k
3630 100
3631 100
SDA
SCL
I²C
CL16532077/025.F8-2

Fig. 8.2

# 8.4 PIP Chrominance/luminance path

The PIP-CVBS signal comes in on the basis of TS7234 (see fig. 8.3). The emitter signal branches off and goes to the PIP synchronisation IC (IC7755). The amplified signal present on the emitter of TS7233 is separated into a luminance and a chrominance signal.
The luminance signal goes to the ADC SDA9087 (IC7406) after a lowpass filter.
*In the case of a single-system unit*, the chrominance signal goes to the PAL decoder IC7126. In the case of multi-system units, the chrominance signal is sent to the multi-standard decoder IC7125.

## PAL only PIP

The chrominance signal is supplied to pin 9 of IC7126 (TDA4510) via a bandpass filter.
Colour demodulation takes place in this IC. For further information on the operation of this IC , see section 5.4.

## Multi-system PIP

In the case of multi-system PIP, the chrominance signal is supplied to pin 15 of IC7125 (TDA4554) via a bandpass filter. The filter can be switched and has 3 positions:

| | |
|---|---|
| -SECAM | In the SECAM position pins 25, 26 and 28 of IC7125 are low. The input filter now fulfils the circuit clock required for SECAM. |
| -PAL | Pin 28 of IC7125 is now high, the filter is now tuned to 4.43 MHz. |
| -NTSC | The filter is now tuned to 3.58 MHz. |

## System identification

IC7125 (TDA4554) automatically switches one of the colour systems on and checks at the same time pins 25 to 28 for the switching of the input filter. The systems are recognised by the burst or identification signal on the back porch.
The identification recognises these signals and then makes one of the output points 25 to 28 high.
Pin 23 is earthed, which means that SECAM line identification is used.

The colour difference signals B-Y and R-Y from the demodulator (IC7125 or IC7126) are supplied to pins 18 and 17 of the A/D converter, respectively.

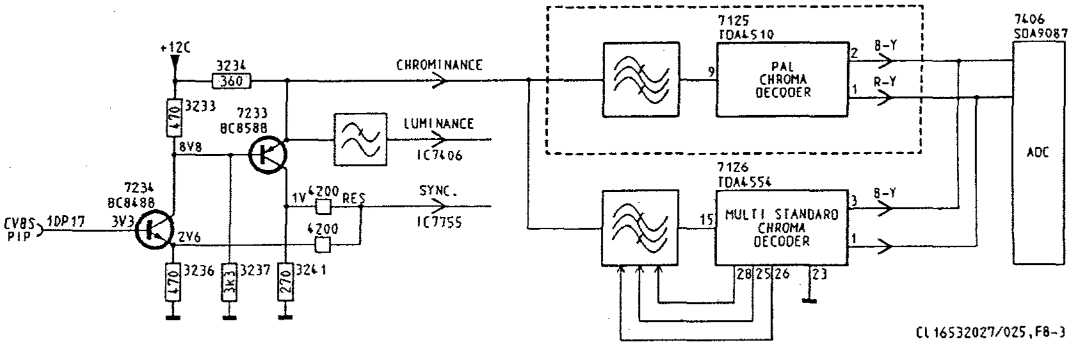

+12C
3234
360
3233
470
7233
BC858B
8V8
7234
BC848B
CVBS PIP
1DP17
3V3
2V6
3236
470
3237
3k3
3241
270
1V
4200
RES
4200
CHROMINANCE
LUMINANCE
IC7406
SYNC.
IC7755
7125
TDA4510
9
PAL CHROMA DECODER
2
B-Y
1
R-Y
7126
TDA4554
15
MULTI STANDARD CHROMA DECODER
3
B-Y
1
28
25
26
23
7406
SDA9087
ADC
CL 16532027/025.F8-3

Fig. 8.3

## 8.5 PIP Synchronisation

Two synchronisations are necessary to process a PIP picture: (see fig. 8.4)

### Acquisition Synchronisation

After processing the PIP picture selected is stored in a memory in the PIP processor (IC7408). Synchronisation with the PIP picture is necessary for this. For this a separate synchronisation IC (TDA2579A) is used. This so-called acquisition synchronisation is used in:

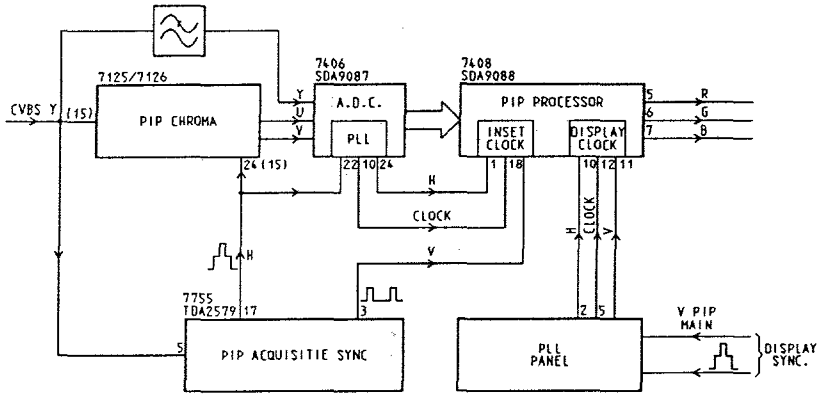
- the chrominance part, where the burst key pulse is used to separate burst and chrominance;
- the analog-to-digital converter (A.D.C.), where the burst key is used for clamping, and where a 13.5 MHz clock is produced which is synchronised with the burst key pulse;
- the PIP processor, where the READIN clock is activated which is controlled by the horizontal synchronisation and the 13.5 MHz clock of the A.D.C. and by the vertical synchronisation pulses from the acquisition sync. IC.

### Display synchronisation

The display of the PIP on the screen must be synchronised with the main picture. The signals for the reading out of the memory of the PIP processor are therefore synchronised with the horizontal and vertical synchronisation pulses of the main picture (display sync).

### Aquisition synchronisation IC (TDA2579)

The CVBS PIP comes in at point 5 of IC7755 (see fig. 8.5). The horizontal oscillator is built up around the C2238, R3238 and R3239 connected to pin 15. Capacitor C2238 is charged with a constant current from the IC7755 to 6 volts and then discharged via R3238 and R3239. By varying the value of R3239, the discharge time, and thus the frequency, can be varied. In order to set the free-running frequency, the input signal can be short-circuited at point 5. The oscillator is now free and this frequency can be adjusted until the picture is still with R3239.


7125/7126
CVBS Y
(15)
PIP CHROMA
Y
U
V
24 (15)
7406
SDA9087
A.D.C.
PLL
22
10
24
7408
SDA9088
PIP PROCESSOR
INSET CLOCK
DISPLAY CLOCK
1
18
10
12
11
5
6
7
R
G
B
H
CLOCK
V
H
CLOCK
V
H
7755
TDA2579
17
3
5
PIP ACQUISITIE SYNC
2
5
PLL PANEL
V PIP
MAIN
DISPLAY SYNC.

CL16532027/025.F8-4

Fig. 8.4

## Vertical synchronisation

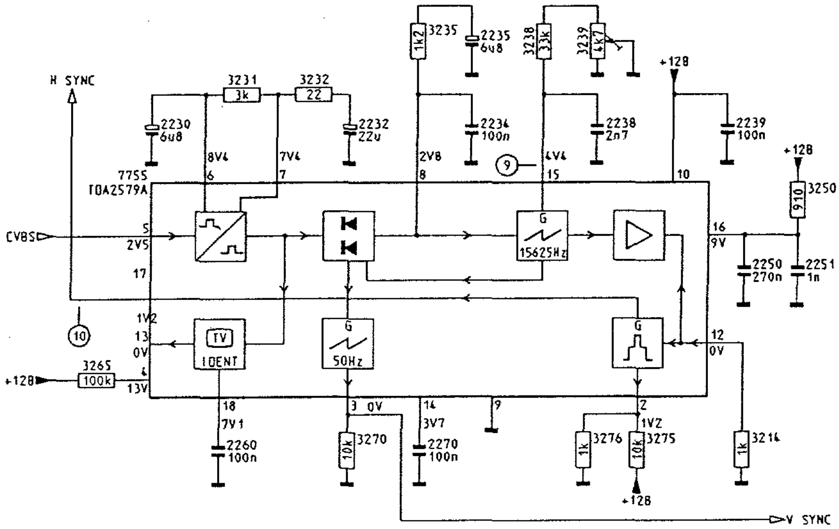
The vertical synchronisation pulses (V) come to the outside via point 3 and are sent to the PIP processor.

## Sandcastle generator

The line pulses supplied by the oscillator (G) go to the sandcastle generator via an amplifier.
The sandcastle pulse at point 17 has two levels:

- 12 volts during the line flyback
- 2.5 volts during the frame flyback

Because the PIP synchronisation does not control any line output stage, the supply voltage (point 10) and the start voltage (point 16) may be switched on at the same time.


H SYNC
3231
3k
3232
22
2230
6u8
2232
22u
8V4
6
7V4
7
7755
TDA2579A
CVBS
5
2V5
17
1V2
13
0V
4
13V
⑩
+12B
3265
100k
IDENT
TV
G
50Hz
18
7V1
2260
100n
3 0V
3270
10k
14
3V7
2270
100n
9
3235
1k2
2235
6u8
3238
33k
3239
4k7
2234
100n
2238
2n7
2V8
8
⑨
4V4
15
G
15625Hz
+12B
2239
100n
10
16
9V
+12B
3250
910
2250
270n
2251
1n
12
0V
G
2
1V2
3276
1k
3275
10k
+12B
3214
1k
V SYNC

CL16532027/025.F8-5

Fig. 8.5

## Display synchronisation IC

Display synchronisation for FL1.1
(SDA9086)

The sandcastle of the main picture comes via a difference amplifier (see fig. 8.6) and an emitter follower at point 8 of IC7410. This IC contains a VCO which produces 27 MHz. The clock (27 MHz) is generated by a PLL circuit which is synchronous with the sandcastle of the main picture and is present at pin 5.
The horizontal synchronisation pulse (H) is obtained from the clock (27 MHz/864) and is thus also synchronised with the sandcastle of the main picture.
The PLL compares the divided clock frequency with the signal at point 8, and generates up/down pulses which are smoothed by the RC network at pin 3. Using this the VCO is adjusted until the clock is an exact multiple of the line frequency of the main picture.

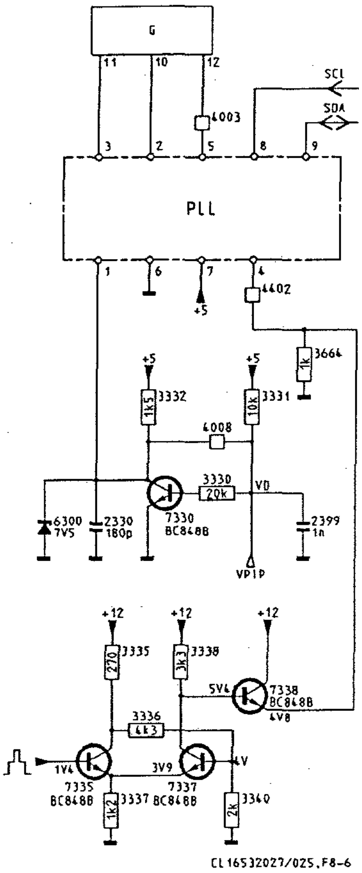


Fig. 8.6

Display synchronisation for FL1.2
Because with chassis FL1.2 the PIP picture must be able to reproduce both 16:9 and 4:3, pictures in 4:3, 16:9 and expand mode of the main picture, various clock frequencies must be available. In order to achieve this, the display synchronisation has several modes. These modes are produced on the PLL panel and controlled via the I²C bus. The display synchronisation is controlled by the sandcastle of the main picture (13250 Hz). This goes via TS7335, TS7337 and TS7338 to pin 4 of this panel. On the PLL a clock signal is then generated which is synchronised with the sandcastle. The frequency of the signal generated depends on the aspect ratios of the main picture and the PIP picture. The frequency for normal picture reproduction is 27 MHz; however, in the following two modes a different frequency is required:

| Frequency | PIP-picture | Main picture |
|---|---|---|
| 20,25 MHz | 16:9 | Expand |
| 36 MHz | 4:3 | 4:3/16:9 |

This frequency change alone is not sufficient to achieve the required result. Via the I²C bus the time constants are also switched in the PIP processor (IC7408/SDA9088).
The vertical synchronisation is obtained from the VPIP signal. This goes via TS7330 to pin 1 of the PLL panel. This signal is inverted on the PLL panel, after which it goes to pin 11 of IC7408.

## 8.6 De A/D converter

**Internal clock frequency**

The analog-to-digital converter is controlled by an internally produced 13.5 MHz clock frequency (see fig. 8.7). This clock frequency is locked to the clock signal supplied to pin 22 from the display sync IC7410.
The colour difference signals R-Y and B-Y enter the A/D converter via TS7402 and TS7400 via pins 17 and 18, respectively.

The Y signal first goes through a lowpass filter to filter out the chrominance signal and to prevent folding deformation.

**Reduced bandwidth**

Because the signal still ultimately appears in the PIP picture on the screen with a reduced bandwidth, the filter has a tilting point of only 1.3 MHz.

The reference voltages are determined in IC7406 by voltage dividers between pin 13 (Vref Low) and pin 12 (Vref High).

**Colour difference signals multiplexed**

Because the bandwidth of the R-Y signal and the B-Y signal is smaller than that of the Y-signal, the sample frequency for R-Y and B-Y may be lower than 13.5 MHz.
Thus, the colour difference signals are multiplexed from 5-bit signals with a sample frequency of 13.5 MHz to 2-bit signals with a sample frequency of 13.5 MHz. This takes place by using only one of each of the 4 samples and dividing the 5 bits of this sample over 2 bits and 4 clock periods.
Because the signals are delayed by this (and by the later demultiplexing), the Y-signal must also be delayed.

**Luminance delay**

This extra delay takes place by an internal delay line, the delay of which is set by the voltage at pins 20 and 21. With the setting used the delay time is set at 6 clock periods.
A horizontal blanking pulse is obtained from the digital Y-signal, which is passed on to the PIP processor via pin 24, where this pulse is used to synchronise the read-in clock.

**Y: 5 bits**
**R-Y : 2 bits**
**B-Y : 2 bits**

The A.D.C. thus supplies a 5-bit Y-signal, a 2-bits B-Y signal and a 2-bit R-Y signal to the PIP processor.

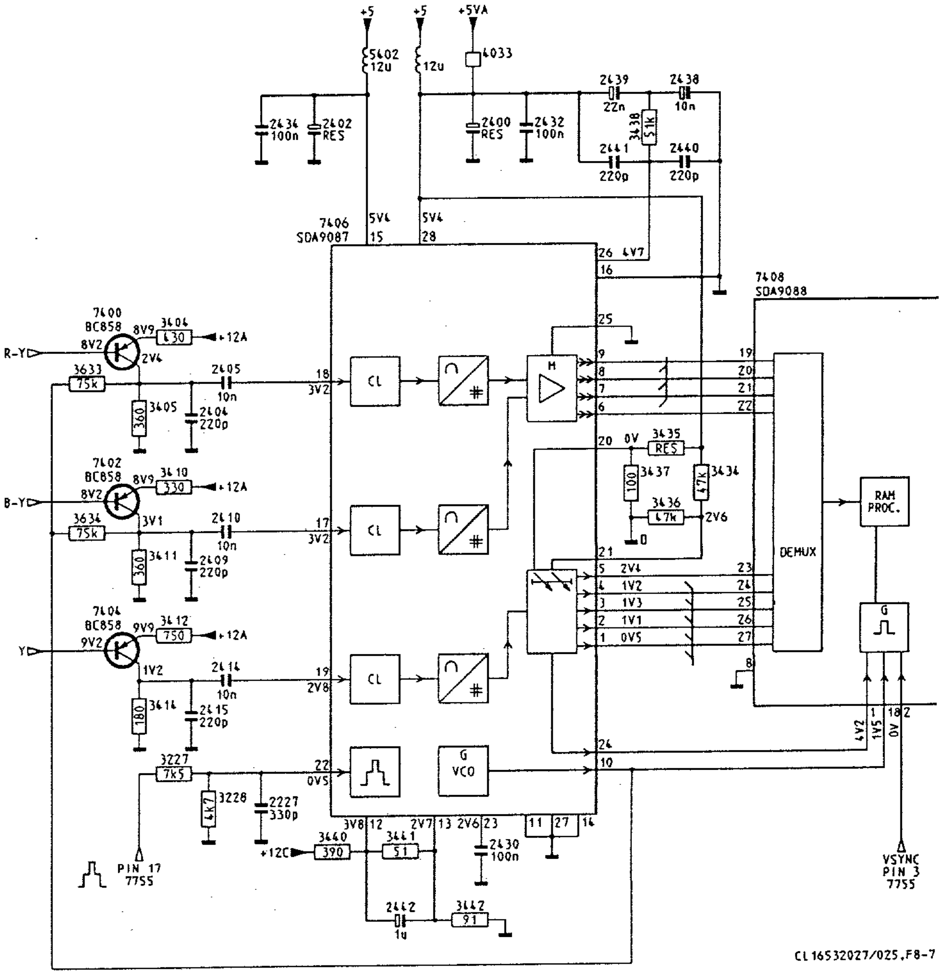

+5
+5
+5VA
5402 12u
12u
4033
2439 22n
2438 10n
3438 5k1
2441 220p
2440 220p
2434 100n
2402 RES
2400 RES
2432 100n
7406 SDA9087
5V4
15
28
26 4V7
16
7408 SDA9088
7400 BC858
3404 430
+12A
R-Y
8V9
8V2
2V4
3633 75k
2405 10n
3405 360
2404 220p
7402 BC858
3410 330
B-Y
3634 75k
3V1
2410 10n
3411 360
2409 220p
7404 BC858
3412 750
Y
9V9
9V2
1V2
2414 10n
3414 180
2415 220p
3227 7k5
3228 4k7
2227 330p
PIN 17 7755
CL
M
G VCO
DEMUX
RAM PROC.
G
3435 RES
3437 100
3434 47k
3436 47k
2V6
0V
3V2
2V8
0V5
3440 390
3441 51
+12C
2430 100n
2442 1u
3442 91
VSYNC PIN 3 7755
4V2
1V5
0V
CL 16532027/025.F8-7

Fig. 8.7

## 8.7 The PIP processor

The PIP processor receives one 5-bit Y and two 2-bits (U and V). These colour difference signals are demultiplexed first.

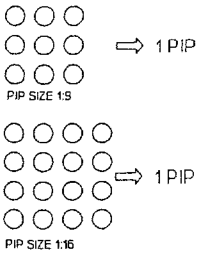


Fig. 8.8

In order to place the PIP picture on a reduced format within the main picture, it must first be compressed. Depending on the PIP size selected, the average of 9 or 16 samples is determined in the decimation filter. This reduction always takes place with 3 or 4 samples in both the horizontal and vertical direction *(see fig. 8.8)*.

In addition to this compression, several lines are left off on the top and bottom of the picture. A number of samples are also left off per line on the left and right. The remaining number of lines and samples is given in table 1.

| PIP SIZE | NUMBERS OF PIXELS PER LINE | | | NUMBER OF LINES |
|---|---|---|---|---|
| 1/9 | 212 | 53 | 53 | 88 |
| 1/116 | 160 | 40 | 40 | 66 |

Because the sample frequency for R-Y and B-Y is 4 times lower than for Y, the number of remaining pixels is also 4 times lower.

This reduced information is now stored in the memory using the INSET clock *(see section 8.5)*.
The memory is read using the DISPLAY clock (see also section 8.5).
In order to convert the read-out Y, R-Y and B-Y signals into a *matrix, R, G and B signals must have the same sample* frequency. The interpolator fulfils this function.

### The interpolator

Three intermediate samples are always calculated and inserted in the interpolator by linear interpolation between two consecutive samples of R-Y and B-Y.
Y, R-Y and B-Y now have the same sample frequency (13.5 MHz).

In the PIP frame blanking part a pulse is produced which is high during the presence of the PIP picture. This fast blanking is carried out via pin 9 and is used to blank the main picture when the PIP picture is present.

### The RGB matrix

R-Y, B-Y and Y are converted into R, G and B in the matrix.

### The DA converter

In the digital-to-analog converter the digital R, G and B signals are converted into analog signals which are then carried out via pins 5, 6 and 7.

### EXT RGB / PIP RGB

In IC7380 a selection is made between RGB from EXT1 or RGB PIP using the PIP frame blanking signal.

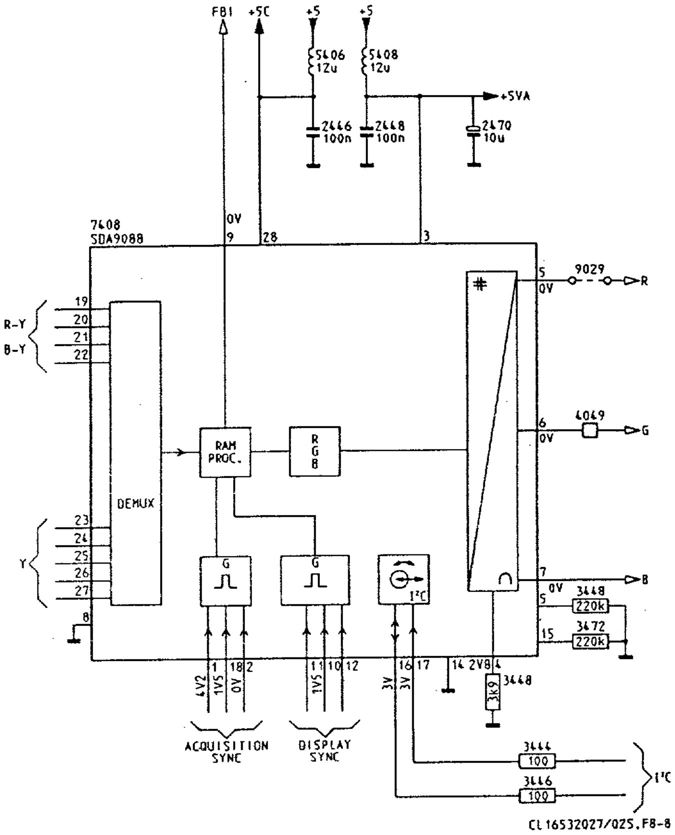

FBI
+5C
+5
+5
5406
12u
5408
12u
+5VA
2446
100n
2448
100n
2470
10u
7408
SDA9088
0V
9
28
3
5
0V
9029
R
19
20
21
22
R-Y
B-Y
RAM
PROC.
R
G
B
6
0V
4049
G
DEMUX
23
24
25
26
27
Y
8
G
G
I²C
7
B
0V
3448
220k
5
15
3472
220k
1
18
2
11
10
12
16
17
14
2V8
4
3448
3k9
4V2
1V5
0V
1V5
3V
3V
ACQUISITION
SYNC
DISPLAY
SYNC
3444
100
3446
100
I²C
CL 16532027/025.F8-8

Fig. 8.9